



## **2011 Joint Program Executive Office for Chemical and Biological Defense Advance Planning Briefing for Industry (APBI)**

**Baltimore, MD**

**7 - 9 September 2011**

### **Agenda**

**Wednesday, 7 September 2011**

#### **Welcoming Remarks**

- BG Jess A. Scarbrough, Joint Program Executive Officer for Chemical and Biological Defense

#### **Opening Remarks**

- Mr. Douglas W. Bryce, Deputy Joint Program Executive Officer for Chemical and Biological Defense

#### **Defense Threat Reduction Agency (DTRA)/Joint Science & Technology Office (JSTO)**

- Dr. Alan Rudolph, Director, Chemical and Biological Technologies Directorate

#### **Joint Requirements Office (JRO)**

- COL William Barnett

#### **DOD CBRN Defense Test & Evaluation Standards Development**

- Mr. Carl Eissner, Army Materiel Systems Analysis Activity

#### **U.S. Army RDECOM Office of Small Business Program Briefing**

- Mr. Jacob Chieffo

#### **JPM Contamination Avoidance/JSTO Senior STM Briefing**

- COL Daniel McCormick/Dr. Ngai Wong

#### **JPM Medical Systems/JSTO Medical Division Chief Briefing**

- COL Charles Millard/Dr. Paula Bryant

#### **JPM Bio Detection/JSTO Senior STM Briefing**

- Mr. Joseph Cartelli/Dr. Ngai Wong

#### **JPM Transformational Medical Technologies (TMT)/JSTO Senior Technical Manager Briefing**

- Mr. Dave Hough/Dr. Eric Van Gieson

#### **JPM Protection/JSTO Senior STM Briefing**

- Mr. William Hartzell/Dr. Charles Bass

**JPM Guardian/JSTO Senior STM Briefing**

- COL Barraclough/Mr. Steve Waugh/Dr. Jason McKenna

**JPM Information Systems/JSTO Chief of Information and Analysis Briefing**

- Mr. Scott White/Mr. Jerry Glasow

**Thursday, 8 September 2011**

**Integrated Base Defense Trail Boss**

- COL Brett Barraclough/Dr. Jason McKenna/Dr. Niki Goerger

**Information Management/Information Technology Trail Boss**

- Mr. Scott White

**Non-Traditional Agent Trail Boss**

- COL Daniel McCormick

**Bio-Surveillance Trail Boss**

- Dr. Jason Roos

**TACOM/ECBC**

- Mr. Kent Schmitz/Mr. Randolph Laye

**Closing Remarks**

BG Jess A. Scarbrough, Joint Program Executive Officer for Chemical and Biological Defense

**DoD Chemical and Biological Defense  
Advance Planning Briefing for Industry (APBI) Agenda  
September 7, 2011**

7:30 am – 8:30 am	Registration and Breakfast
8:30 am – 8:40 am	Administrative Remarks <b>Dr. John Wade</b> Vice President, Joint and Interagency Market Group
8:40 am – 8:55 am	Welcoming Remarks: <b>Joint Program Executive Officer for Chemical and Biological Defense</b> BG Jess A. Scarbrough
8:55 am – 9:05 am	Opening Remarks: <b>Deputy Joint Program Executive Officer for Chemical and Biological Defense</b> Mr. Douglas W. Bryce
9:05 am – 9:45 am	Dr. Alan Rudolph Director, Chemical and Biological Technologies Directorate, Defense Threat Reduction Agency (DTRA)/Joint Science & Technology Office (JSTO)
9:45 am – 10:05 am	Joint Requirements Office (JRO) COL William Barnett
10:05 am – 10:25 am	DOD CBRN Defense Test & Evaluation Standards Development Mr. Carl Eissner, Army Materiel Systems Analysis Activity
10:25 am – 10:45 am	U.S. Army RDECOM Office of Small Business Program Briefing Mr. Jacob Chieffo
10:45 am - 11:15 am	<b>Break</b>
11:15 am – 11:55 am	JPM Contamination Avoidance/JSTO Senior STM Briefing COL Daniel McCormick/Dr. Ngai Wong
11:55 am – 12:35 pm	JPM Medical Systems/JSTO Medical Division Chief Briefing COL Charles Millard/Dr. Paula Bryant
12:35 pm – 1:05 pm	JPM Bio Detection/JSTO Senior STM Briefing Mr. Joseph Cartelli/Dr. Ngai Wong
1:05 pm - 2:05 pm	<b>Lunch</b>
2:05 pm – 2:35 pm	JPM Transformational Medical Technologies (TMT)/JSTO Senior Technical Manager Briefing Mr. Dave Hough/Dr. Eric Van Gieson
2:35 pm - 3:20 pm	JPM Protection/JSTO Senior STM Briefing Mr. William Hartzell/Dr. Charles Bass
3:20pm - 3:45 pm	<b>Break</b>
3:45 pm – 4:25 pm	JPM Guardian/JSTO Senior STM Briefing COL Brett Barraclough/Mr. Steve Waugh/Dr. Jason McKenna
4:25 pm – 4:55 pm	JPM Information Systems/JSTO Chief of Information and Analysis Briefing Mr. Scott White/Mr. Jerry Glasow
4:55 pm – 5:00 pm	Closing Remarks: <b>Joint Program Executive Officer for Chemical and Biological Defense</b> BG Jess A. Scarbrough
5:00 pm – 6:30 pm	<b>Networking Reception</b>

**DoD Chemical and Biological Defense  
Advance Planning Briefing for Industry (APBI) Agenda  
September 8, 2011**

7:30 am - 8:30 am	Registration and Breakfast
8:30 am- 8:40 am	Welcome Remarks: <b>Joint Program Executive Officer for Chemical and Biological Defense</b> BG Jess A. Scarbrough
8:40 am- 9:00 am	Integrated Base Defense Trail Boss COL Brett Barraclough/Dr. Jason McKenna/Dr. Niki Goerger
9:00 am – 9:20 am	Information Management/Information Technology Trail Boss Mr. Scott White
9:20 am - 9:40 am	Non-Traditional Agent Trail Boss COL Daniel McCormick
9:40 am - 10:00 am	<b>Break</b>
10:00 am - 10:20 am	Major Defense Acquisition Programs Trail Boss Mr. William Hartzell
10:20 am - 10:40 am	Bio-Surveillance Trail Boss Dr. Jason Roos
10:40 am – 11:00 am	TACOM/ECBC Mr. Kent Schmitz/Mr. Randolph Laye
11:00 am - 11:30 am	Closing Remarks: <b>Joint Program Executive Officer for Chemical and Biological Defense</b> BG Jess A. Scarbrough
11:30 am - 1:00 pm	<b>Lunch</b>
1:00 pm - 5:00 pm	<b>One-on-one Sessions</b>

**DoD Chemical and Biological Defense  
Advance Planning Briefing for Industry (APBI) Agenda  
September 9, 2011**

8:00 am- 5:00 pm	<b>One-on-one Sessions-</b> time slots will be filled on site
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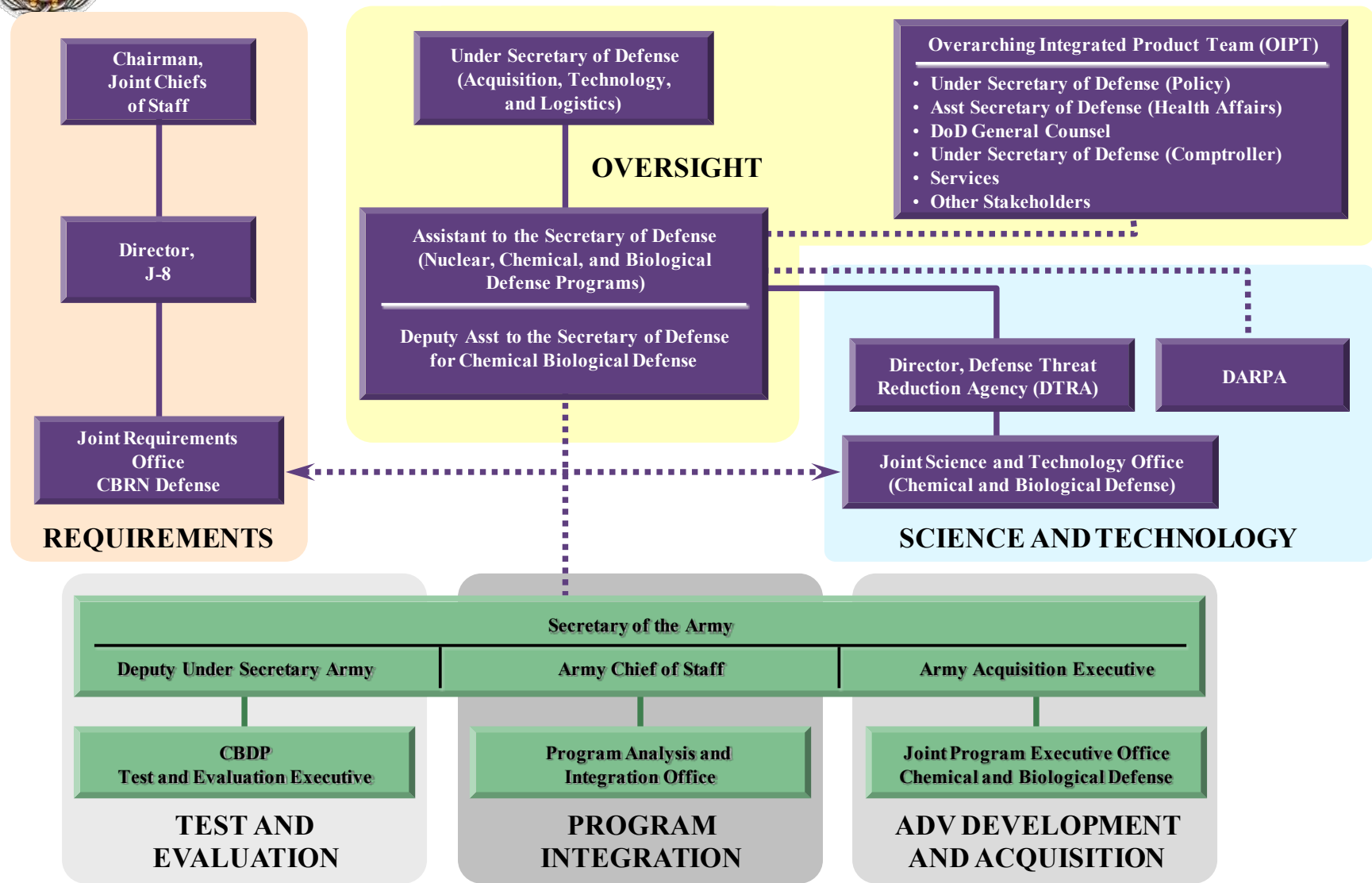
# Joint Requirements Office for CBRN Defense

8 September 2011

COL Bill Barnett  
Deputy Director, JRO-CBRND  
[william.barnett@js.pentagon.mil](mailto:william.barnett@js.pentagon.mil)  
(703) 571-3050



# Chemical and Biological Defense Program Organization





# CB Defense Program Senior Leadership


*Chairman, Joint Chiefs of Staff*

**Admiral Mike Mullen**



*Under Secretary of Defense (Acquisition, Technology and Logistics)*

**Hon Dr. Ashton Carter**




*Director for Force Structure, Resources, and Assessment, J8 The Joint Staff*

**Lieutenant General Larry O. Spencer**



*Assistant Secretary of Defense (Nuclear, Chemical, and Biological Defense Programs)*

**Hon Andrew C. Weber**



*Director, Defense Threat Reduction Agency*

**Mr. Kenneth A. Myers III**




*Director, Joint Requirements Office CBRN Defense*

**Brigadier General Lucas N. Polakowski**



*Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense*

**Dr. Gerald W. Parker, Jr.**



*Director, Joint Science and Technology Office for Chemical and Biological Defense*

**Dr. Alan S. Rudolph**



*Joint Combat Developer*

**Colonel Vance P. (Phil) Visser**




*Assistant Secretary of the Army for Acquisition, Logistics and Technology*

**Acting Heidi Shyu**



*Acting CBDP Test and Evaluation Executive*

**Mr. David K. Grimm**



*Joint Program Executive Officer for Chemical and Biological Defense*

**Brigadier General Jess Scarbrough**





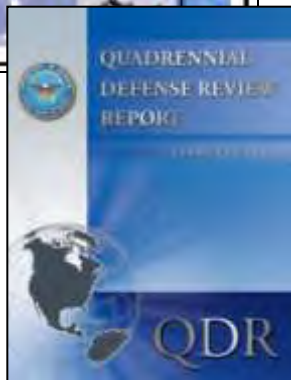
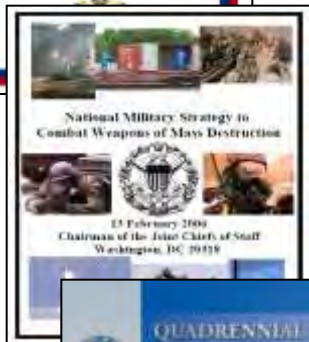
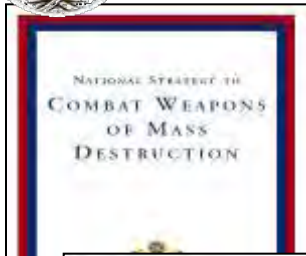
# *CWMD Strategic Priorities*

- Increasing barriers to WMD proliferation and use
- Strengthening our ability to identify and mitigate emergent WMD threats
- Developing layered and integrated defense to WMD
- Managing WMD threats that emanate from failing or fragile states and ungoverned spaces

*USD(P) Flournoy*

*7 May 09*

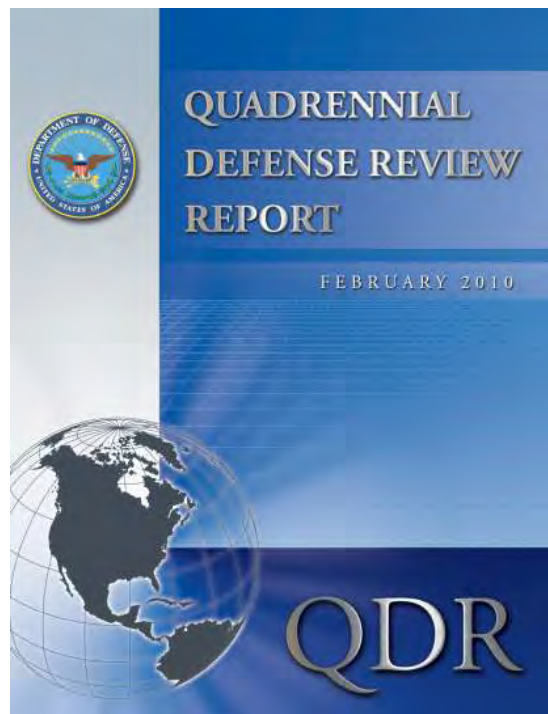
# *CWMD Foundation*



- National Strategy to Combat Weapons of Mass Destruction articulates a strategy built upon the three pillars of nonproliferation, counterproliferation, and consequence management.
- National Military Strategy to Combat WMD (NMS-CWMD) amplifies the strategy in the NSS and provides a framework for combating WMD to DOD Components.
- 2010 Quadrennial Defense Review Report states that the proliferation of nuclear, chemical, biological and radiological capabilities among state and non-state actors can threaten our ability to defend U.S. and allied interests, promote peace and security, ensure regional stability and protect our citizens. Further the use of a nuclear weapon or a biological attack would have global ramifications.



# *Quadrennial Defense Review Report*



**The QDR Report identifies six key missions:**

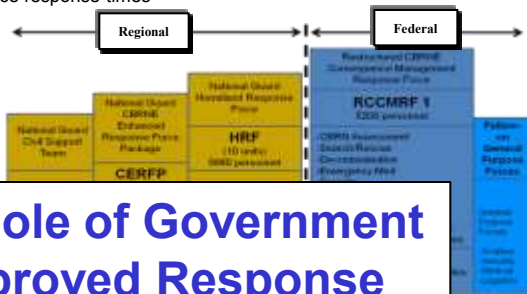
- *Defend the United States and support civil authorities at home;*
- Succeed in counterinsurgency, stability, and counterterrorism operations;
- Build the security capacity of partner states;
- Deter and defeat aggression in anti-access environments;
- *Prevent proliferation and counter weapons of mass destruction*
- Operate effectively in cyberspace.





*Restructured Consequence Management Response*

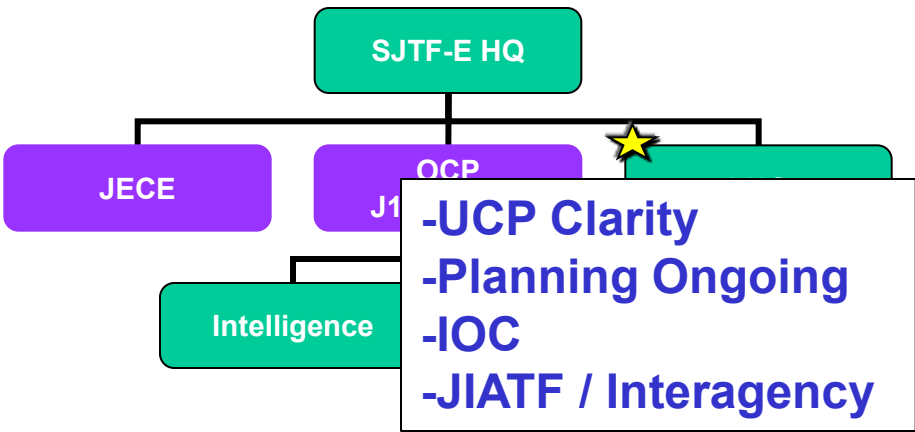
- Enhanced lifesaving capabilities
- Maximize flexibility
- Reduce response times



Expanded to 10 FEMA regionally aligned Homeland Response Forces (HRFs)      Creates C2 CBRNE Response Enterprise (CRE) of ~1500 pax each

*Last Year's Presentation*

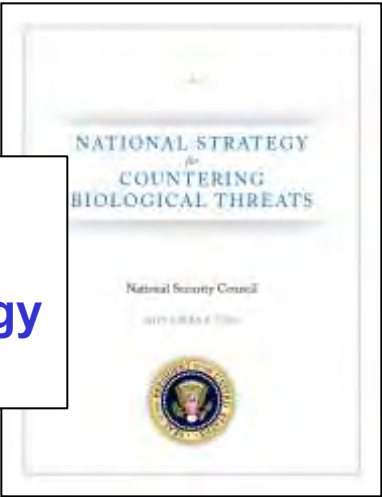
*Standing Joint Task Force-Elimination Headquarters*



*National Strategy for Countering Biological Threats*

- Goal: **PROTECT** against the misuse of the life sciences to develop or use biological weapons.
- Objectives:
  - Promote global health security

**-BW Surveillance**  
**-Able Response**  
**-Campaign Strategy**  
**-Interagency**



*Foreign Consequence Management*

- USEUCOM Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) Change Request (DCR)
  - Increase assessment capability
  - Increase mitigation capability
  - Pending JCB
- HYDRA EXPRESS
  - STRATCOM
  - Focused on
  - CBRN threats

**-OPERATION TOMODACHI**  
**-Whole of Government**  
**-RN Lessons**



# *Inside the Building...improving the process*

## ***...What is the role of the JROC?***

- Statutory (10 USC 181); “The JROC shall”...
  - Identify and assess priority of joint military requirements including existing systems and equipment;
  - Evaluate cost, schedule, and performance of programs and identified alternatives; and
  - Assign priorities that conforms and reflects resource levels projected
- Further detailed in CJCSI 5123.01; JROC Charter

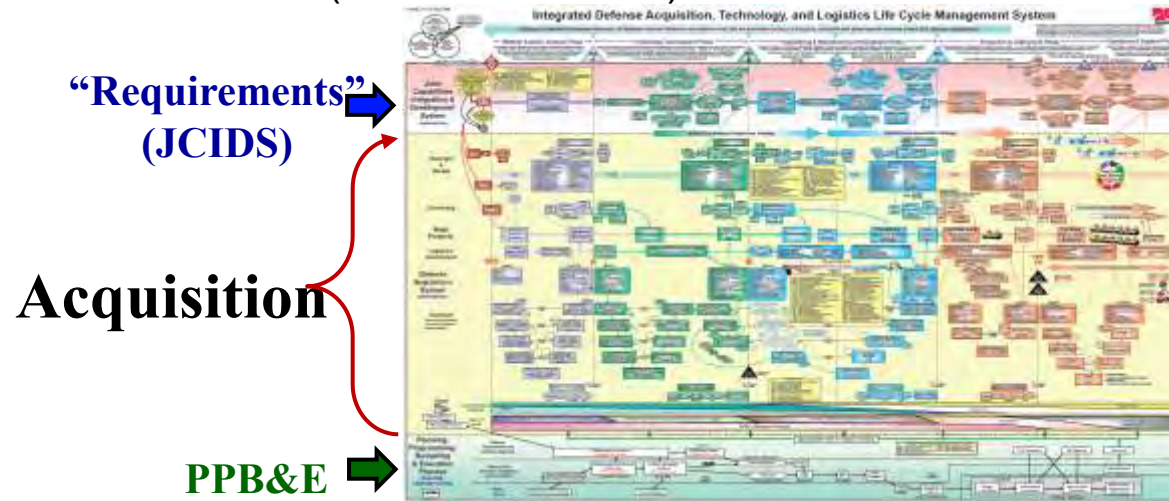
**JCIDS exists to support the JROC and other validation authorities in their requirements process responsibilities...**



# *JCIDS is...our process*



- A key supporting process for DoD acquisition and PPBE processes
  - That supports “the statutory responsibility of the JROC to validate joint warfighting requirements”
  - And supports the CJCS advising the Secretary of Defense in identifying, assessing and prioritizing joint military requirements
  - A Staffing method enabling the Joint Staff to ensure Sponsors’ needs meet the Chairman’s intent (Joint force needs)



JCIDS along with the Defense Acquisition System and the Planning, Programming, Budgeting and Execution processes form the principal DOD decision support processes for developing capabilities required by the military forces to support the national military strategy and the defense strategy



# *JCIDS Review and Targeted Improvements*

- Reduce time to Solution development
- Earlier Decisions with better scoped information
- Less document-centric
- Mechanisms to conduct across portfolio review
- Agility without “requirements creep”
- Key customers (COCOMs) in the decision process
- Mechanisms to trace developments from gap identification through solution fielding



# Capability Development Tracking and Management (CDTM)

- IT system that transforms JCIDS capability tracking from document-centric to **data-centric** process
  - Developed and deployed on NIPRNet and SIPRNet
  - 30 June 2011 mandated CDTM use for all JCIDS documents (ICD, CDD, CPD, DCR)



- Capability gap traceability ✓
- Process metrics ✓
- Ease of use enhancements
  - Improved search capability ✓
  - Improved document creation ✓
  - Input standardization ✓
- Ability to data share with other DoD applications ✓

The screenshot shows the CDTM web application interface. At the top, there's a navigation bar with links: Home, My CDTM, New, Search, Resources, Document Keeper, Admin, KM/OS, Help, and Log Off. Below the navigation bar, a message states: "This Page Contains Data Classified up to the Level of Unclassified". The main content area is titled "ICD Wizard - General Information" and contains a form for entering metadata for an Initial Capability Document (ICD). The form includes fields for: Initial Capability Document Title (Cryptographic Capabilities Modernization), Document Short Name or Acronym (Crypto Modernization), Validation Authority (JROC), Approval Authority (JROC), Joint Potential Designator (JROC Interest), Sponsoring Agency (Army), Prepared for (JROC Interest), Milestone Decision Authority (ARMY), Predecessor Document Title, Predecessor Documents (No records found or no records to display), Predecessor Document Type (JCIDS Document), and an "Add Predecessor Document" button. A "Quick Guide" sidebar on the right provides instructions: "General Information - Enter the metadata for this Initial Capability Document (ICD) that will identify the document and the review/approval components for the capability. This data will show on the cover page of the printed ICD." At the bottom of the form, there are buttons for "Save" and "Reset".

# Summary



- Field faster, more flexible CM response forces
- Whole of Government Solutions
- Worldwide BW Surveillance / EID
- Rapidly field defensive countermeasures – ADM
- Elimination Capability
- Transformational Medical Technologies and Non-Traditional Agent



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# JPEO-CBD: Business Opportunities for Industry



*Douglas W. Bryce*  
*SES, USA*  
*Deputy Joint Program Executive Officer for*  
*Chemical and Biological Defense*  
*703.681.9600*

September 7, 2011

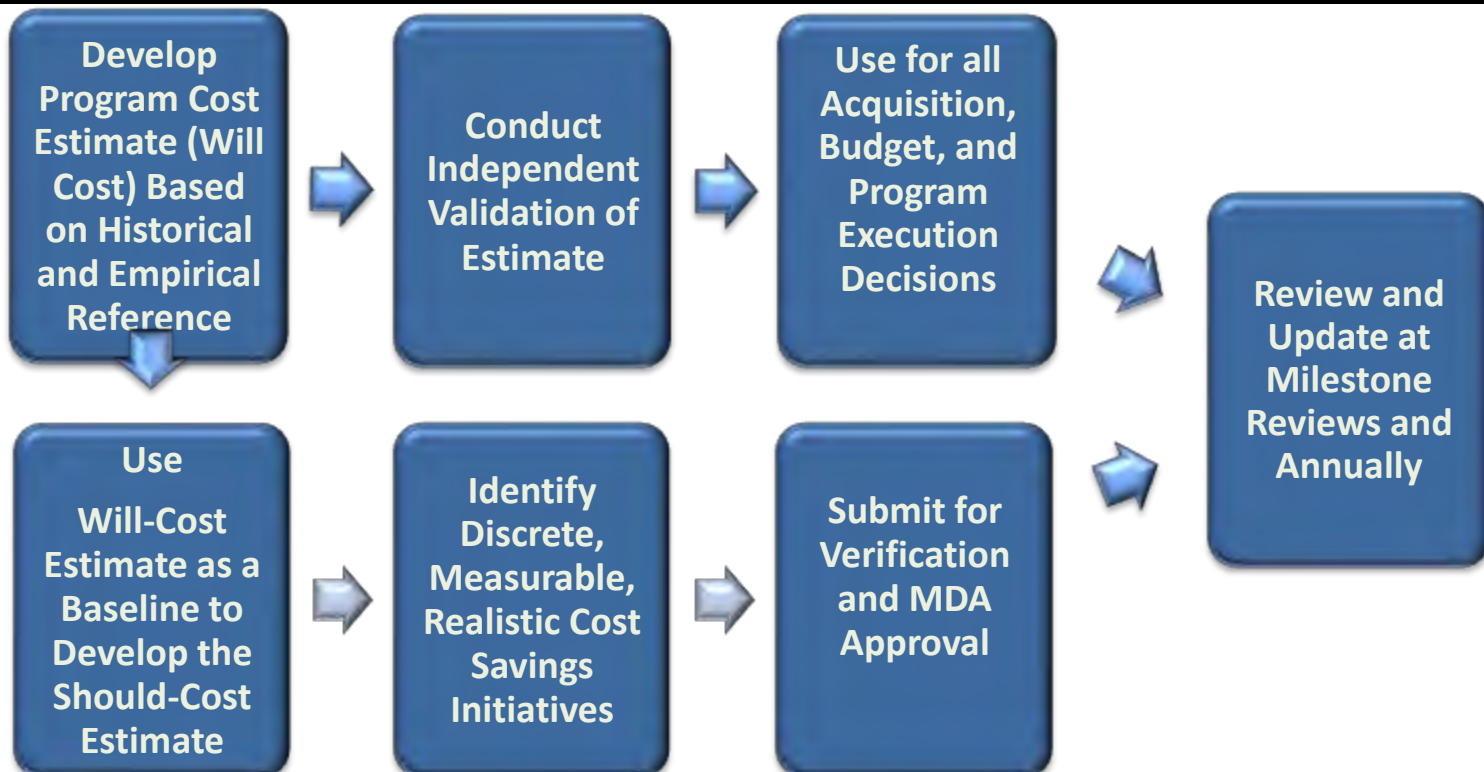






# Restoring Affordability & Improving DoD's Business Operations: *Will Cost/Should Cost Process*

***USD(AT&L) Objective: Obtain 2-3% Net Annual Growth in Warfighting Capabilities without Commensurate Budget Increase by Identifying and Eliminating Unproductive or Low-Value-Added Overhead and Transfer Savings to Warfighting Capabilities.***



***Should Cost Management Throughout the Program Drives Program Teams to Scrutinize every Element of Program Cost to Identify how those Elements can be Conducted more Efficiently, thus Reducing Overall Program Cost and Allowing Savings to be Redirected to other Priorities***



# Budget Guidance

- “..military spending on things large and small can and should expect closer, harsher scrutiny.”
- “..it is unlikely that we will achieve the real growth rates necessary to sustain current force structure.”
- “Another category ripe for scrutiny should be overhead”

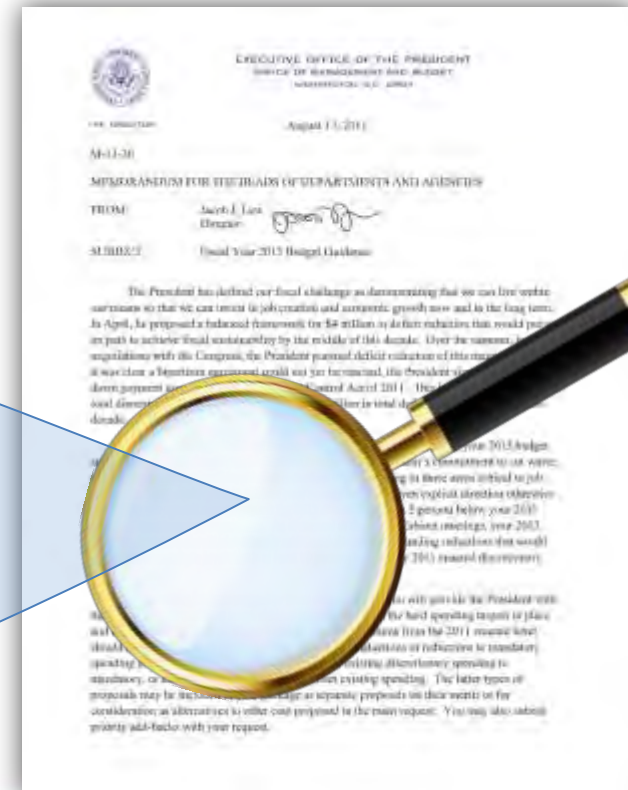
8 May 2010 Sec Gates Speech Eisenhower Library

- “..reduce funding devoted to unneeded or low-priority overhead..eliminating unneeded programs and activities..”
- “But other savings can be found within programs and activities we do need, by conducting them more efficiently.”
- “..the savings we are seeking will not be found overnight.”
- “We need the input and involvement of industry..”

28 June 2010, Memo, Dr. Carter, Subject: Better Buying Power: Mandate for Restoring Affordability and Productivity in Defense Spending

## 17 Aug 2011 Office of Management and Budget FY13 Budget Guidance

- “...your overall request for 2013 should be **AT LEAST** 5 percent below your 2011 enacted discretionary appropriation.”
- “...identify additional discretionary funding reductions that would bring your request to a level that is at least 10 percent below your 2011 enacted discretionary appropriation.”

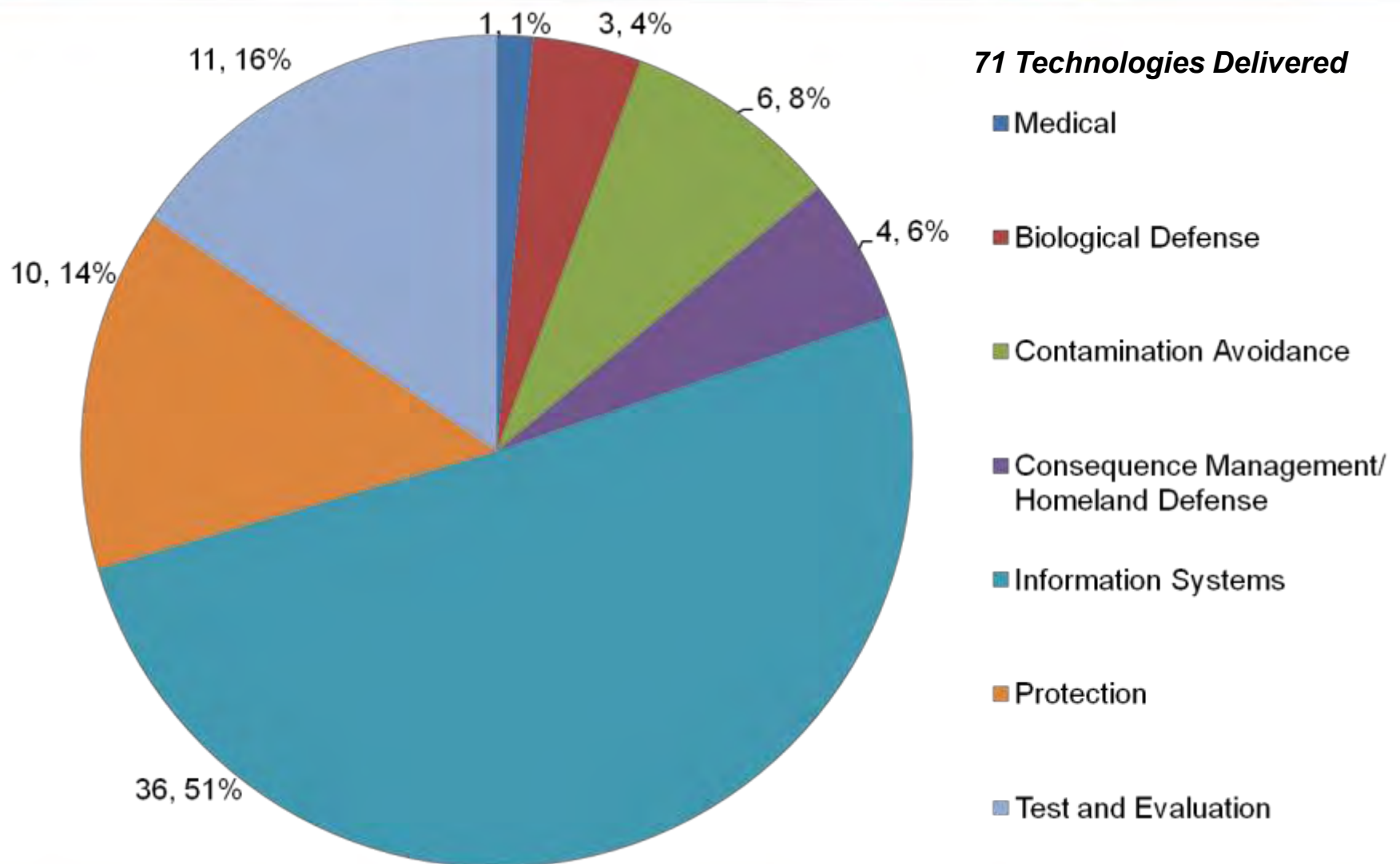


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# Technologies Delivered\*

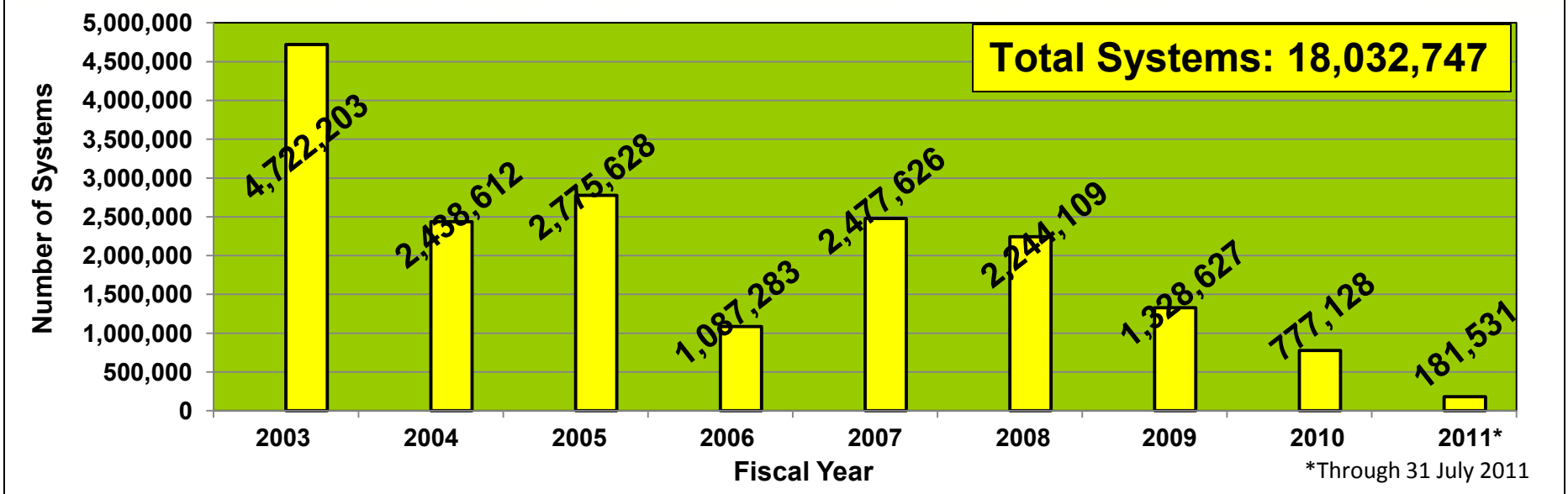


\*4QFY06-3QFY11



# Material Delivered


**Systems the JPEO CBD Fielded to Joint Force**  
(All Items)



Biological Detectors
Chemical Detectors
Radiological Detectors
Bio-Medical Systems (JBAIDS)
Vaccines (Anthrax & Smallpox)
Collective Protection
Individual Protection Equipment
Installation Protection Program
Consequence Management Systems
Decontamination (Individual)
Decontamination (Equipment)
Information Systems



# Strategic Shift in the Joint Service DoD CBD Program

- 
- *H1N1 Pandemic/Plus Potential WMD Threats*
  - *Presidential Policy Directive 2 (PPD-2)*
  - *Guidance from DoD (Recent QDR)*

## Emphasis is on BIOLOGICAL Threats

“The effective dissemination of a lethal biological agent within an unprotected population could place at risk the lives of hundreds of thousands of people. The unmitigated consequences of such an event could overwhelm our public health capabilities, potentially causing an untold number of deaths. The economic cost could exceed one trillion dollars for each such incident.”

– *National Strategy for Countering  
Biological Threats, November 2009*

“The prevention of nuclear terrorism and proliferation [is] at the top of the U.S. nuclear policy agenda. Given al-Qaida’s continued quest for nuclear weapons, Iran’s ongoing nuclear efforts, and the North Korea’s proliferation, this focus is appropriate...”

– *Secretary Gates  
April 2010*

“We are launching a new initiative that will give us the capacity to respond faster and more effectively to bioterrorism or an infectious disease.”

– *President Obama 2010 State of the Union Address*



# Expanded JPEO-CBD Missions Areas

- **Medical Countermeasures Initiative (MCM-I)**
  - White House Directed Memo/Deputy Secretary of Defense Memo
  - Implements Executive intent for DoD capacity to respond faster and more effectively to biological threats / infectious disease
  - Advanced Development & Manufacturing (ADM) Facility: Dedicated Capability to Develop and Manufacture Medical Countermeasures
  - RFP Released on 26 Aug 2011
- **Radiological/Nuclear Mission**
  - Based on QDR, AAE Requested JPEO-CBD be designated JPEO-CBRND/DAE Endorsed Request and was Coordinated with CBDP stakeholders and services
  - JPEO-CBRND will assume the Life Cycle Management Acquisition Role for Rad/Nuc Defense; DoDD being Staffed within DOD
- **Integrated Base Defense**
  - Based on multiple memos signed by AAE's PMILDEP, JPEO-CBD is the Interim IBD lead (Trail Boss)
  - Mission set has led to enhanced force protection role for JPEO-CBD



# JPEO-CBD OMNIBUS CONTRACT

- **Primary medium for acquiring SETA Services**
  - Incorporates best practices (CEOss, AMCOM Express, and other contract vehicles)
  - **JPEO-CBD Command Policy Letter will direct use of BBP for all JPMOs/Directors**
    - **Convert this to contract vehicle as options come up**
- **Annual services acquired expected to be \$ 65-95m based on recent data call**
- **Draft Performance Work Statement out in one month/award during 3<sup>rd</sup> Qtr 2012**

**CEOss/AMCOM Express Model With Flexible, In-House Management and Ownership Structure**



# JPEO-CBD OMNIBUS CONTRACT

- Will include large pool of medical and nonmedical vendors
- Compete at the TO level
  - 30-45 days per TO depending on size of award
  - Comply with new policies for competition (peer review, legal)
- Will encourage small business and use of set asides
- Open Season when necessary

**Use a GSA MAS model under an ID/IQ Multiple Company/Multiple Award Execution**





# Program Strategy Guidance

- **Strengthen Capabilities for Enhanced Diagnostics, Genomic Capability and Emerging Chem/Bio Threats**
- **Defend Warfighters and Citizens with Protection and Detection Capability**
- **Develop and Produce Medical Countermeasures**
- **Timely Warning, Modeling, and Reporting**



# **Chemical and Biological Defense Investment Summary**

- **Supports Whole of Government Centers for Innovation in Advanced Development and Manufacturing**
- **Continues Transformational Medical Technologies and Non-Traditional Agent Efforts**
- **Improves Capabilities by Harnessing and Developing Cutting Edge Technologies**
- **Continues to Procure and Field Priority Warfighter Materiel**

**Maintains Capability to Execute DoD Assigned Operations  
Across the Spectrum of Countering WMD Missions**





# BIOLOGICAL DEFENSE

September 7, 2011

## Advanced Planning Briefing to Industry

**Mr. JOE CARTELLI**  
Acting JPM BIOLOGICAL DEFENSE  
Joint Program Executive Office for  
Chemical and Biological Defense  
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**DR. NGAI WONG**  
DETECTION Senior S&T Manager  
Joint Science and Technology Office  
for Chemical and Biological Defense  
[Ngai.Wong@dtra.mil](mailto:Ngai.Wong@dtra.mil)



# Outline



- **Overview**
- **Joint Product Manager, Family of Point Systems**
  - Science and Technology Challenges
  - Program Overview / Warfighter Needs / Acquisition Strategy
- **Joint Product Director, Stand-off Detection**
  - Science and Technology Challenges
  - Program Overview / Warfighter Needs / Acquisition Strategy
- **Schedule / Funding**
- **Upcoming Business Opportunities**
- **Contacts**



# Overview



## S&T

- **Vision**

- We will nurture a vibrant S&T organization that **CREATES** programmatic vision in **COLLABORATION** with intramural and extramural communities, and **COMMUNICATES** impact to the warfighter as revolutionary products and capabilities are achieved.

- **Mission**

- To invest in transformational ideas, innovative people, and actionable technology development for Chemical Biological Defense solutions
- 

## JPM BD

- **Strategic Vision**

- Lead the world in Biological Defense.

- **Mission**

- Develop, test, produce and sustain biological defense capabilities within established **COST, SCHEDULE, PERFORMANCE** criteria and **CONTINUOUSLY IMPROVE** our Nation's ability to **SURVIVE AND DEFEAT** the threat of biological warfare to our Joint Warfighter.



# JPM Biological Defense Organization



## Acting Joint Project Manager for Biological Defense (JPM-BD)

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## Joint Product Manager for Biological Point Family of Systems

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## Joint Product Director Stand-off Family Of Systems

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## Director for Program Management

Richard Spencer

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# Joint Product Manager Point Family of Systems



# S&T Challenges



- **Joint Biological Tactical Detection System (JBTDS)**
  - **Automated Sample to Sequence Capability**
    - Environmental and Clinical matrices
    - Portable, battery operated (less than 1 cu ft)
    - Response time of 60 min or less
  - **Development of New Sources and Detectors**
    - Optimal Performance at Room Temperature
    - Low Cost, Solid State
    - Smaller, Lighter, and Lower Power Components
  - **Enhanced bio-informatics/meta-genomics**
    - Simpler/faster Algorithms
    - Automated data to decision tools



# Science & Technology (S&T) Needs



- **Environmental Bio-Surveillance (EBS)**
  - **Automated Sample to Sequence Capability**
    - Environmental and Clinical matrices
    - Portable, battery operated (less than 1 cu ft)
    - Response time of 60 min or less
  - **Low Cost Point of Need Assays**
    - Handheld like HHA
    - Confirmation of known targets
    - Easy to produce, long shelf-life
  - **Enhanced bio-informatics/meta-genomics**
    - Simpler/faster Algorithms
    - Automated data to decision tools

# JBTDS Overview

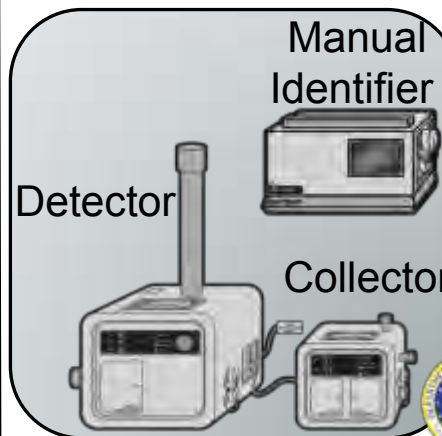
## What JBTDS brings to the fight?

- First increment of tactical biological aerosol point detection, collection and identification capability to the joint forces
  - Provides capability to facilitate rapid initiation of medical countermeasures for casualty management actions
  - Provides capability to limit BW casualties by increasing area commander's situational awareness

## Technology

- Multiple technologies will be demonstrated during competitive prototyping:
  - Collection: Dry collection
  - Detection: Raman; UV fluorescence
  - Identification: PCR; Immunoassay

## System Overview



### Milestone Dates

**MDD – Jul 09**

**MS A – Jan 11**

**MS B – 3QFY13**

### Users



## Why Invest in this Technology?

- Lightweight, low cost, Near COTS
- Compatible with multiple power sources
- Net Ready
  - CCSI compliant
  - JWARN compatible
- Near real time detection
  - (Detect < 1 min; Identify < 60 min)
- Organic capability





# Warfighter Needs



- **JBTDs**

- **Tactical BWA aerosol detection capability**

- **Lightweight**
    - **Easy to use**
    - **Minimal training**
    - **Battery-operable**
    - **Low cost**
    - **Low false alarm rate**
    - **Near real time detection & identification**
    - **Reduced Logistics**
    - **Expeditionary Forces**



# JBTDS Program Acquisition Strategy



- **Technology Development Phase Underway**
  - CP contracts awarded July 2011
- **MS B planned for 3Q13**
- **EMD will focus on integration of detection, collection and identification capabilities into a deployable, employable and sustainable system**



# Joint Product Director Stand-off Detection



# Science & Technology (S&T) Needs



- **Joint Biological Stand-off Detection System (JBSDS)**
  - **Understanding biological cross section data and how it relates to optical technologies to provide agent classification, decreased false alarms, and possible inclusion of chemical aerosol detection.**



# JBSDS-2 Overview



## What JBSDS brings to the fight?

- Given near real time acquisition, it supports the “detect to warn” model offering an opportunity to:
  - Preemptively adjust MOPP or initiate other protective actions
  - Finalize contamination avoidance efforts
- Rapidly initiate medical BW casualty management actions prior to biological agent arrival
- Increase the area commanders situational awareness by providing:
  - Time/Origin of attack
  - Real Time Mapping/Tracking of Suspect Aerosol Cloud

## Technology

- Three Light Detection and Ranging (LIDAR) Technologies being investigated for JBSDS 2
  - Differential Elastic Scattering (DISC)
  - Elastic Scatter Depolarization (Depol)
  - Laser Induced Fluorescence (LIF)
- All assessed at TRL 4 or above

## System Overview



### Milestone Dates

**MDD – Jul 09**

**MS A – Jan 11**

**MS B – 1QFY15**



## Why Invest in this Technology?

- Day/Night Operation
- Low False Alarm Rate
- Network Ready
- Significant Discrimination Range/Warning Time
- Enhanced Cloud Mapping and Tracking
- Reduced Size, Weight and Power



# Warfighter Needs



- **JBSDS**

- **Stand-off (Detect to Warn) BWA aerosol detection capability**

- **Day/Night Operation**
    - **Lower False Alarm Rate**
    - **Network Ready**
    - **Enhanced Cloud Mapping and Tracking**
    - **Longer Discrimination Range**
    - **Reduced Size, Weight and Power**



# JBSDS Program Acquisition Strategy



- **Technology Development Phase will determine and mature the appropriate set of technologies to be integrated into a full system, and demonstrate Critical Technology Elements (CTEs) on prototypes**
  - CP contracts to be awarded 1QFY12
  - MS B planned for 1QFY15
- **Engineering and Manufacturing Development Phase will focus on complete full system integration based on the results of the TD Phase**



# S&T Program Schedule



Fiscal Year	FY10	FY11	FY12	FY13	FY14	FY15	FY16																					
Algorithm Development																												
Automated Sample to Sequence																												
Auto Sample to Sequence Phase II																												





# Program Schedule



PD/JPM	Program	FY11	FY12	FY13	FY14	FY15	FY16
FOS	JBPDS						
FOS	JBTDS						
Stand-off	JBSDS						

6.4

6.5

PROC

Sustainment



# S&T Funding (\$M) (FY11 President's Budget)



YEAR/ RTDE	FY12	FY13	FY14	FY15	FY16	TOTAL FY12-16
6.2	24.9	18.8	20.4	19.7	24.7	108.5
6.3	15.3	26.2	21.2	21.2	21.7	105.6
TOTAL BUDGET	40.2	45.0	41.6	40.9	46.4	214.1



# Program Funding (\$M) (FY11 President's Budget)



YEAR/ RTDE	FY11	FY12	FY13	FY14	FY15	TOTAL FY11-15
6.4	44.3	9.5	2.9	4.2	3.2	64.1
6.5	17.4	39.7	32.4	25.6	16.7	131.7
Proc	43.6	49.6	91.7	123.2	141.6	449.6
TOTAL BUDGET	105	92	127	153	161	639

Defense Wide Funding Only

Army Procurement Funding FY11PB for BIDS - \$150.4M



# S&T Business Opportunities



OPPORTUNITY	TIME-FRAME
<b>Algorithm Development (Annual)</b>	
<b>– NSF BAA</b> <a href="http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503427">http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503427</a>	<b>Open now</b>
<b>CB Defense Physical Science and Technology (Bi-annual) BAA</b>	
<b>– For New Start Projects (FY10-15)</b>	<b>November 2011</b>
<b>TRA/Field Trial – Automated Sample to Sequence Platform</b>	
<b>– TBD</b>	<b>Summer 2013</b>
<b>CB Defense Small Business Innovation Research (SBIR)</b>	
<b>– <a href="http://www.acq.osd.mil/sadbu/sbir/homepg.htm">http://www.acq.osd.mil/sadbu/sbir/homepg.htm</a></b>	
<b>– For New Start Projects (FY10-15)</b>	<b>Mid-Nov 2011</b>



# Upcomming Business Opportunities



OPPORTUNITY		TIME-FRAME
<b>JBTDS</b>		
<ul style="list-style-type: none"><li>– RDECOM Acquisition Center (Full and Open Competition)</li><li>– DRFAT RFP for EMD</li></ul>		FY12
<b>JBSDS</b>		
<ul style="list-style-type: none"><li>– RDECOM Acquisition Center (Full and Open Competition)</li><li>– DRAFT RFP for EMD</li></ul>		FY14



# S&T Points of Contact



- Dr. Ngai Wong, Detection SSTM, 703-767-3314, S&T, [ngai.wong@dtra.mil](mailto:ngai.wong@dtra.mil)
- Dr. Christian Whitchurch, Detection STM, 703-767-3313, S&T, [christian.whitchurch@dtra.mil](mailto:christian.whitchurch@dtra.mil)
- Dr. Brandi Vann, Detection STM, 703-767-3407, S&T, [brandi.vann@dtra.mil](mailto:brandi.vann@dtra.mil)



# JPM Biological Defense Contacts



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JBSDS Team Leader

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U.S. Army Research, Development and Engineering Command



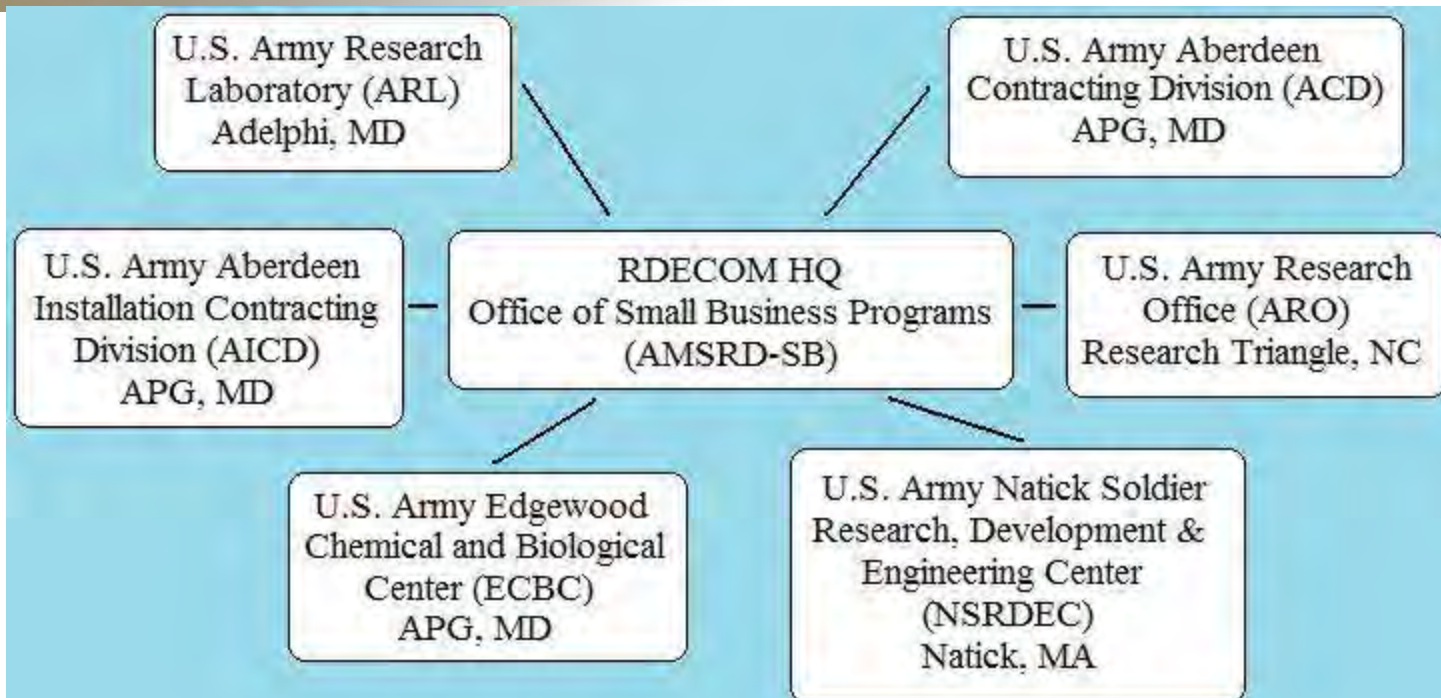
***TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.***

Office of Small Business Programs  
Jacob Chieffo, Assistant Director  
[svc.rdecom.osbp.apgr@us.army.mil](mailto:svc.rdecom.osbp.apgr@us.army.mil)



# Topics Ahead:

- RDECOM OSBP Structure
- RDECOM and Edgewood spending in FY2011
- Top NAICS codes for Edgewood customers
- Small Business Program goals for FY2011
- Subcontracting vs. Participation
- RDECOM OSBP Website Introduction



These are supported by other LCMC Contracting Centers:

U.S. Army Armament Research, Development and Engineering Center (ARDEC) Picatinny Arsenal, NJ

U. S. Army Aviation and Missile Research Development and Engineering Center (AMRDEC) Huntsville, AL

U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) Warren, Michigan

U.S. Army Communications-Electronics Research, Development, and Engineering Center (CERDEC) APG, MD



# FY2011: RDECOM (incl. ATEC)

As of 1 June 2011, roughly \$2.56B obligated:

- Small Business: \$818.98M (31.98%)
- Small Disadvantaged: \$159.17M ( 6.21%)
- Women-Owned: \$ 84.41M ( 3.30%)
- HUBZone: \$134.13M ( 5.24%)
- Service Disabled Veteran: \$ 59.38M ( 2.32%)
- HBCU/MI\*: \$ 4.89M ( 8.99%)

\* HBCU is calculated against “higher education” total spend of \$54.37M



# FY2011: Edgewood Contracting Div.

As of 1 June 2011, roughly \$329.49M obligated:

- Small Business: \$34.85M (10.58%)
- Small Disadvantaged: \$ 8.73M ( 2.65%)
- Women-Owned: \$ 3.89M ( 1.18%)
- HUBZone: \$ .54M ( 0.17%)
- Service Disabled Veteran: \$ 2.81M ( 0.85%)
- HBCU/MI\*: \$ .89M (39.47%)

\* HBCU is calculated against “higher education” total spend of \$4.78M



# Edgewood Contracting Division's Top NAICS, FY2010 (DODAAC: "W911SR")

- 541330 "Engineering Services"
- 541710 "R&D in Physical, Engineering, Life Sciences"
- 334516 "Analytical Lab Instrument Mfg"
- 334511 "Search, Detection.. Instrument Mfg"
- Runners up: 541712, 339113, 334519, 541711, 335999, 541620





# RDECOM FY2011 SB Goals

Small Business:	30.0%
Small Disadvantaged:	7.0%
Women-Owned:	5.0%
HUBZone:	7.0%
Service Disabled Veteran:	2.0%
HBCU/MI:	10.0%
- SB Subcontracting:	43.0%
- SDB Subcontracting:	3.0%
- WOSB Subcontracting:	3.0%
- HUBZone Subcontracting:	3.0%
- SDVOSB Subcontracting:	0.3%





# New Subcontracting Goals = More Attention

- Aggressiveness of Subcontracting Plan goals during source selection
- Follow-through on that Subcontracting Plan treated as a contract deliverable
- Likelihood of invoking Liquidated Damages Clause (52.219-16):
  - Contracting Officer determines “Good Faith Effort” of contractor to meet goals
  - Dollar-for-dollar consideration required: “The amount of probable damages attributable to the Contractor’s failure to comply, shall be an amount equal to the actual dollar amount by which the Contractor failed to achieve each subcontract goal”



# Subcontracting Plan vs. Participation Plan

- Not required from Small Businesses
- Percentage of subcontracts
- Acceptable/Unacceptable
- Incorporated into Contract at award
- Reported in eSRS, CPARS
- Provides subcontracting commitment
- Required from all offerors
- Percentage of entire effort
- Rated Factor
- Not incorporated
- Perhaps CPARS
- Provides magnitude

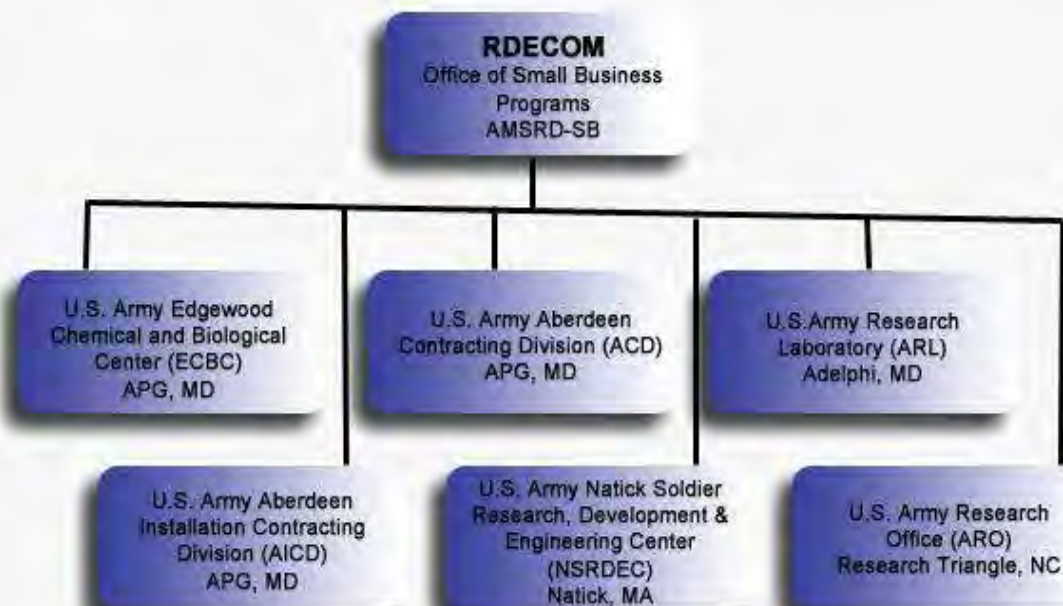


# Office of Small Business Programs

*Small Business = Something Big*

Welcome to the RDECOM Office of Small Business Programs (OSBP) website. I encourage all business concerns to use this website as an entry point for gathering actionable information about conducting business with RDECOM. We anticipate updating information often so that we may provide the best source of information to the business community. It is our hope that you will find this site useful and review it thoroughly prior to contacting our office.

—John O'Brien, Associate Director



Tony Jacobs, (left) President, Metropolitan Enterprises, listens to John O'Brien, Associate Director, Aberdeen Proving Ground.



AUSA Winter Symposium in Fort Lauderdale, FL. Army Photo by Cherish Washington, AMC Public Affairs.



## Additional Resources

Related OSBP websites

Small Business Assistance

Policy Updates

## External Links

Federal Acquisition Regs  
(FAR)DOD FAR Supplement  
(DFARS)Army FAR Supplement  
(AFARS)

## U.S. Army Edgewood Chemical and Biological Center (ECBC)

Aberdeen Proving Ground, MD 21010-5423

**Principal Interests:** Research, concept exploration, demonstration, validation, and engineering manufacturing development for biological/chemical defense systems, obscuring smoke and aerosol systems, and flame weapons.

**DODAAC:** W911SR

US Business FY2010 Dollars: \$510,386,357

US Business FY2009 Dollars: \$733,492,877

US Business FY2008 Dollars: \$558,044,845

*\*Total dollar amounts as found in FPDS***Top 10 NAICS by Dollar for this Site:**

541330 (Engineering Services)

541710 (Research and Development in the Physical, Engineering, and Life Sciences)

334516 (Analytical Laboratory Instrument Manufacturing)

334511 (Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing)

541712 (Research and Development in the Physical, Engineering, and Life Sciences (Except Biotechnology))

339113 (Surgical Appliance and Supplies Manufacturing)

334519 (Other Measuring and Controlling Device Manufacturing)

541711 (Research and Development in Biotechnology)

335999 (All Other Miscellaneous Electrical Equipment and Component Manufacturing)

541620 (Environmental Consulting Services)

Contracting Support is provided by [APG-CC-SCRT](#)

The following are a selection of major customers fulfilling requirements via the Contracting Center's Edgewood Division:

[ECBC- Edgewood Chemical Biological Center](#)[CMA- Army Chemical Materials Agency](#)[ACWA- Assembled Chemical Weapons](#)[CBRN School](#)[JPEO-CBD Chemical & Biological Defense](#)[JPM-BD Biological Defense](#)[JPM-CP Collective Protection](#)[JPM-CA Contamination Avoidance](#)[JPM-IP Individual Protection](#)[DARPA Defense Advanced Research Projects Agency](#)[DTRA- Defense Threat Reduction Agency](#)

UNCLASSIFIED

[Edgewood Contracting Division Sole Sourcing Activity](#)



# Let's talk today

[www.rdecom.army.mil/SmallBusiness/](http://www.rdecom.army.mil/SmallBusiness/)

# DoD CBRN Defense (CBRND)

## Test & Evaluation Standards Development



## JPEO-CBD Advanced Planning Briefings for Industry (APBI)

### 7 September 2011

**Carl Eissner, TECMIPT Chair**

Chief, Chemical Demilitarization & CBRN Analysis Branch (AMSAA)

[carl.m.eissner.civ@mail.mil](mailto:carl.m.eissner.civ@mail.mil)

Phone: 410-278-6389



## PURPOSE

To provide information to the Defense Industry on the establishment of DoD CBRND T&E standards and their role in the process.

## TOPICS

CBRND T&E Executive Oversight Role

Why Have CBRND T&E Standards?

DoD CBRND T&E Standards Development Process





# CBRND T&E Executive - Oversight Role



## Ensure adequate T&E for CBRN defense systems

- **Establish T&E Standards**
- **Coordinate community planning and investment in T&E infrastructure**
- **Provide T&E guidance for acquisition programs**
  - Approve test documentation
  - Resolve T&E Issues
- **Ensure early T&E involvement in acquisition programs**
  - Facilitate test matrix that meets program budget/schedule
  - Reduce costly redundant testing
- **Provide T&E Policy for the Enterprise**



# Why Have T&E Standards?



"It is essential for the Nation to have reliable CBRNE equipment that can be used with confidence for the protection of life, health, property, and commerce. The United States Government will, together with commercial and end-user communities, facilitate the development and implementation of national consensus standards, and develop an enduring capability to coordinate, prioritize, and implement CBRNE standards."

*"A National Strategy for CBRNE Standards"*

*National S&T Council, Subcommittee on Standards*

*Signed by President's Science Advisor 17 May 11*



# Understanding Test Data



Dilbert.com DilbertCartoonist@gmail.com



8-11-10 © 2010 Scott Adams, Inc./Dist. by UFS, Inc.





# DoD CBRND T&E Standards Background



- Army T&E Executive “dual-hatted” as the CBRND T&E Executive
- Joint community Test and Evaluation Capabilities and Methodologies Integrated Process Team (TECMIPT) established March 2005 to:
  - Provide CBDP technical Subject Matter Expertise (SME) for the CBRND T&E Executive
  - Identify T&E capability/infrastructure gaps in support of the POM and T&E strategies
- TECMIPT role expanded in July 2009 to include development of CBRND T&E Standards for CBRND T&E Executive approval
  - CBDP T&E Standards Development Plan - signed out in July 2010 with GO/SES concurrence from four service OTAs, JPEO-CBD, JSTO, JRO
  - TECMIPT now **interagency**, with DHS, NIST, EPA, DOE actively involved
  - TECMIPT T&E standards development coordinated with international partners

**CBRND T&E Executive establishes T&E Standards through the TECMIPT**



# T&E Standards

## National and International Priority



DUSA-TE currently coordinating CBRND community T&E standards with federal agency and international partners :

- DOD/DHS/EPA Technical Coordination Working Group (TCWG)
- White House National S&T Council (NSTC) Subcommittee on Standards (SoS) Roadmap Working Group (WG)
  - A National Strategy for CBRNE Standards (includes T&E Standards) was signed out by the President's Science Advisor 17 May 2011
- ASCAUKUS CBR MOU Test, Evaluation and Simulation Working Group (TESWG) and other fora

**Ultimate goal: Reliable data shared by all**

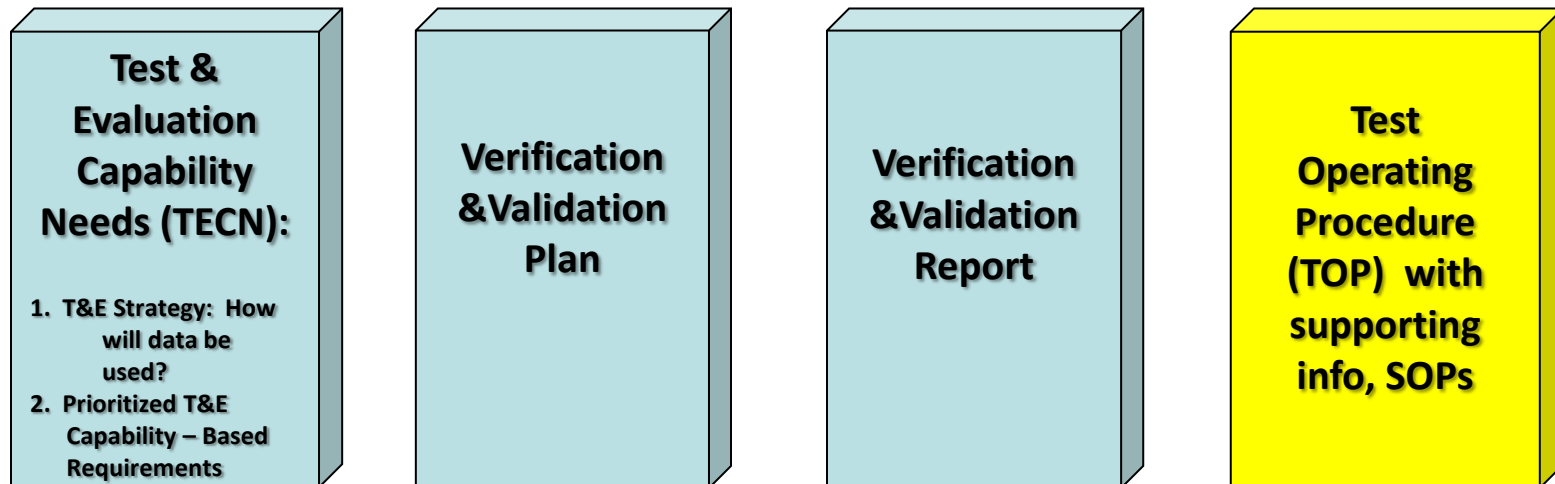


# DoD T&E Standards Definition



Validated test infrastructure/methodologies that produce reliable, reproducible data to meet T&E community needs and inform decision makers

## T&E Standards Documents



**Documentation w/details are critical to common understanding of test data**



# Interagency T&E Standards Benefits



- **Enable quality, affordable defense systems for the Warfighter and First Responder. Standards provide:**
  - Common T&E definitions, language
  - Common, quality test data that can be shared/understood by all
  - Reduced test redundancy
  - Validated T&E infrastructure that meets interagency data requirements
- **Especially critical for T&E of Commercial Off the Shelf (COTS) equipment used by military and first responders**

## Interagency signature means:

- T&E Standard is technically sound
- Documentation is adequate in terms of detail, quality and clarity
- Agency will support use of test method and sharing of data



**Community buy-in is critical for implementation of T&E Standards**



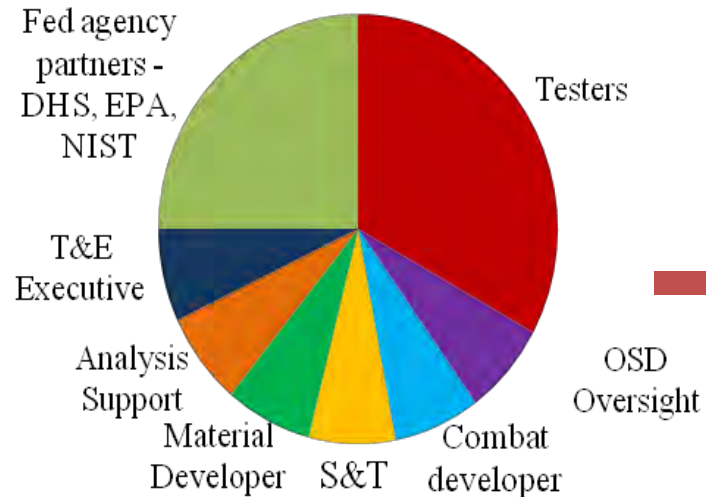


# DoD Process for Establishing T&E Standards



**TECMIPT cross-community subject matter experts provide rigor to T&E standards development**

## TECMIPT Members



## Worldwide CBRND T&E Standards Partners







# TECMIPT Responsibilities



## Nine TECMIPT sub-groups, i.e. Capability Area Process Action Teams (CAPATs)

- Identify and prioritize CBRND T&E capability gaps for POM input
- Develop and prioritize requirements for T&E capabilities
- Provide technical **community-wide development/review** of T&E standards documents, **O6/GS-15 level concurrence** to CBRND T&E Executive for approval

Chemical  
Detection

Biological  
Detection

Decontamination

Individual  
Protection

Modeling &  
Simulation  
(M&S)

Collective  
Protection

Radiological/  
Nuclear  
Defense

Non-  
Traditional  
Agent (NTA)

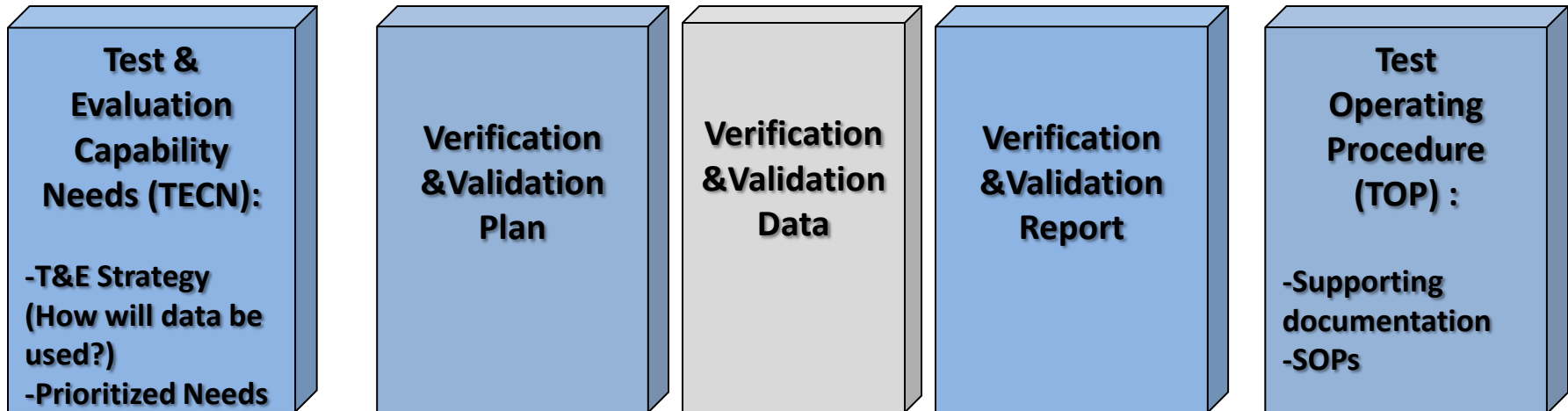
Bio Surveillance  
(currently being formed)

**CAPATs**

**CAPAT SMEs provide technical rigor to T&E Standards**



# T&E Standards - Developed/Reviewed by CAPATs



**CAPAT SMEs critical to success**



# Current TECMIPT Interagency T&E Collaboration Examples



**DHS, NIST, EPA now collaborate to establish/implement CBRN T&E standards**

- **Rad/Nuc CAPAT**

- Chaired by NIST, 22 other federal agencies participating under:
  - National Institute of Standards and Technology (NIST) (Chair)
  - Department of Defense (DoD)
  - Department of Homeland Security (DHS)
  - Environmental Protection Agency (EPA)
  - Department of Energy (DOE)
- Developing an interagency Commercial Off The Shelf (COTS) test program
  - Includes ISO certification/accreditation of test labs
- Reviewing/concurring on detection and decontamination T&E methodologies

## INTERAGENCY COLLABORATION SUCCESS STORY

Quickly provided interagency Rad T&E Subject Matter Experts (SMEs) to help JPM-P answer urgent question from field in Japan following nuclear reactor incident: “Does CBD decon and personal protection equipment work against the Japan Rad threat?”



# Current TECMIPT Interagency T&E Collaboration Examples

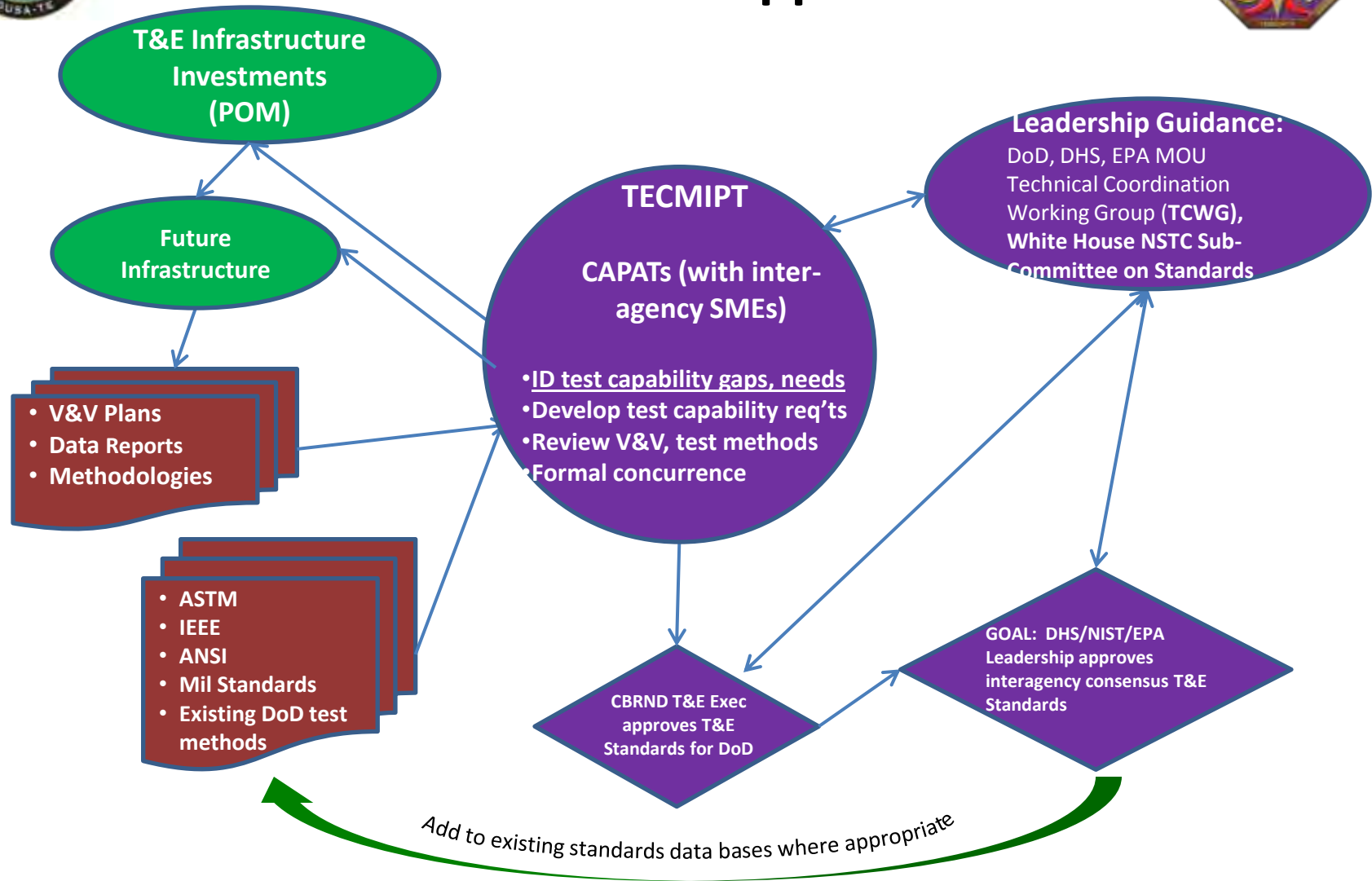


- JSTO, JHU/APL, DUSA-TE working toward T&E Standards and testbed for TRL 4 and above bio surveillance systems
- Initial planning meeting held 26 Aug 11
- Bio Surveillance Capability Area Process Action Team (CAPAT) WG to be established with interagency, academia, DoD members
- Chemical Detection and NTA CAPATs to also accept academia input

**Bio Surveillance testing to be “born” interagency**



# Proposed Interagency T&E Standards Approach





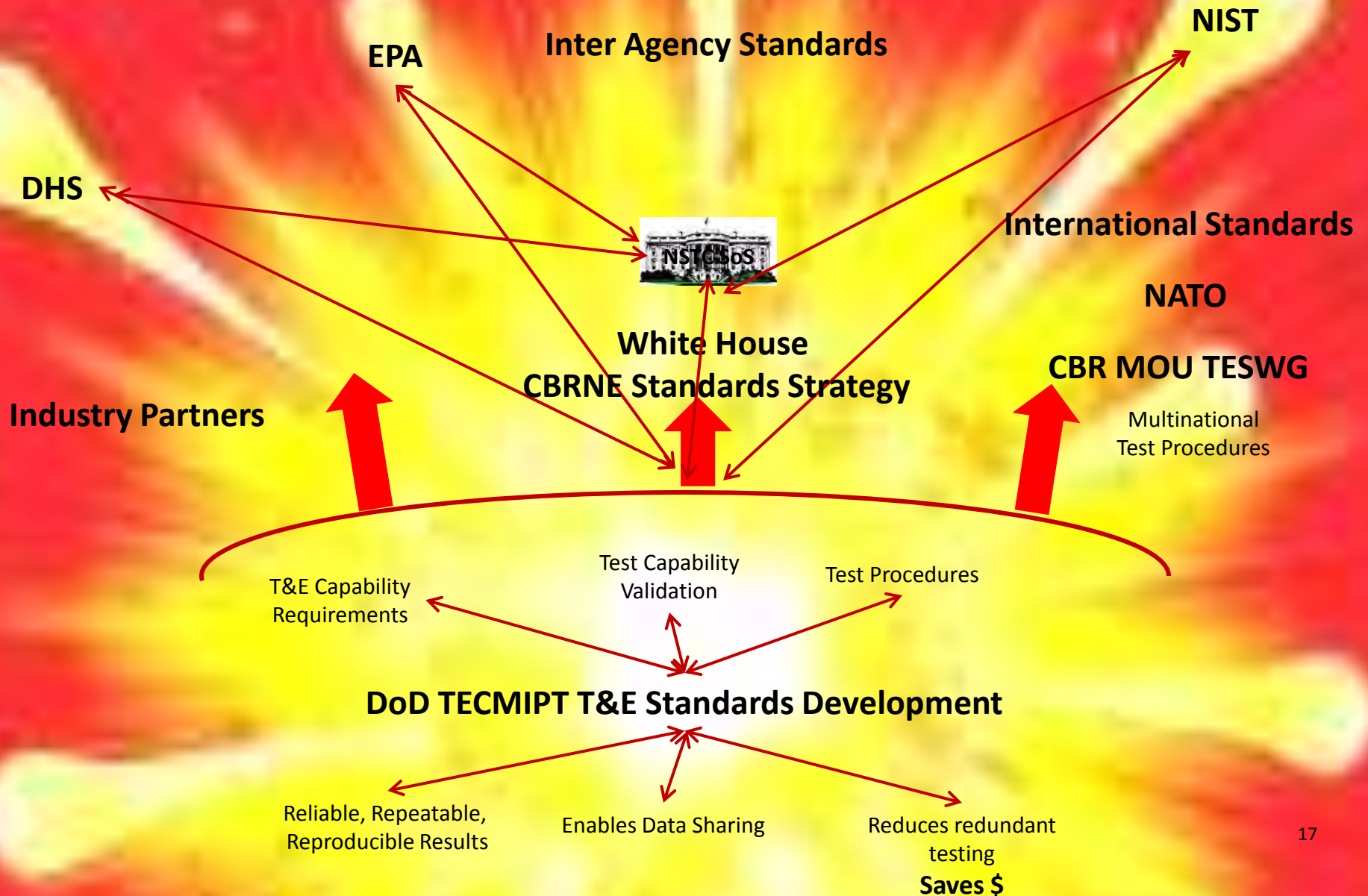
# Summary



- **T&E Standards facilitate quality CBRND systems for Warfighters, First Responders and all users**
- **Many different T&E “consensus standards” currently exist, but are not complete for CBRND performance testing**
- **DoD is united with other agencies for common CBRND T&E Standards through TECMIPT**
  - Critical for President’s National Strategy
  - Provides consensus across more stakeholders
- **CAPAT participation and the TECMIPT Standards processes to be extended to Industry partners for their valuable input**

**T&E Standards are critical for vendor data and product acceptance**

# Explosion of Interest in TECMIPT CBRND T&E Standards Process





**UNCLASSIFIED**

# ***Joint Project Manager Protection Advanced Planning Briefing for Industry***



Joint Program Executive Office for Chemical and Biological Defense  
Joint Project Manager Protection



**William D. Hartzell**  
**Joint Project Manager for Protection**  
**703-617-2444**  
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**Charles A. Bass , Jr., Ph.D., P.E.**  
**Science and Technology Manager,**  
**Protection & Hazard Mitigation, JSTO**  
**[charles.bass@dtra.mil](mailto:charles.bass@dtra.mil)**

**7 September 2011**







# Outline



- **Science and Technology Overview**
- **JPM Protection Overview**
- **JPM Protection Approach to Future Capability Acquisition**
- **Science and Technology Future Concepts, Strategies and Approaches**
- **Resources and Business Opportunities**
  - Science and Technology
  - JPM Protection
- **Points of Contacts**
  - Science and Technology
  - JPM Protection



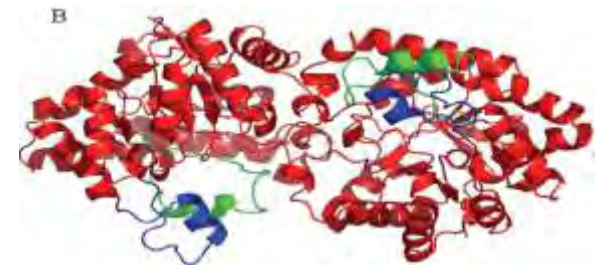
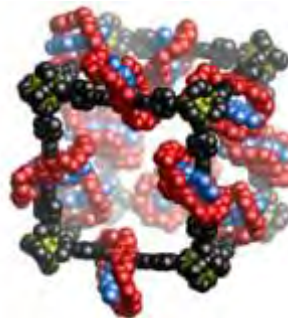
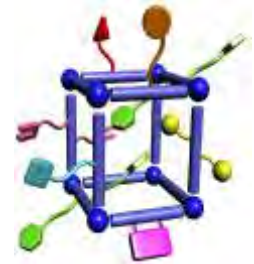
# Science & Technology (S&T) Overview



**Objective: Develop science and technology that protects the warfighter from the full range of chemical and biological agents by supporting acquisition programs of record and providing the material developer with innovative and revolutionary alternatives that meet the user's needs**

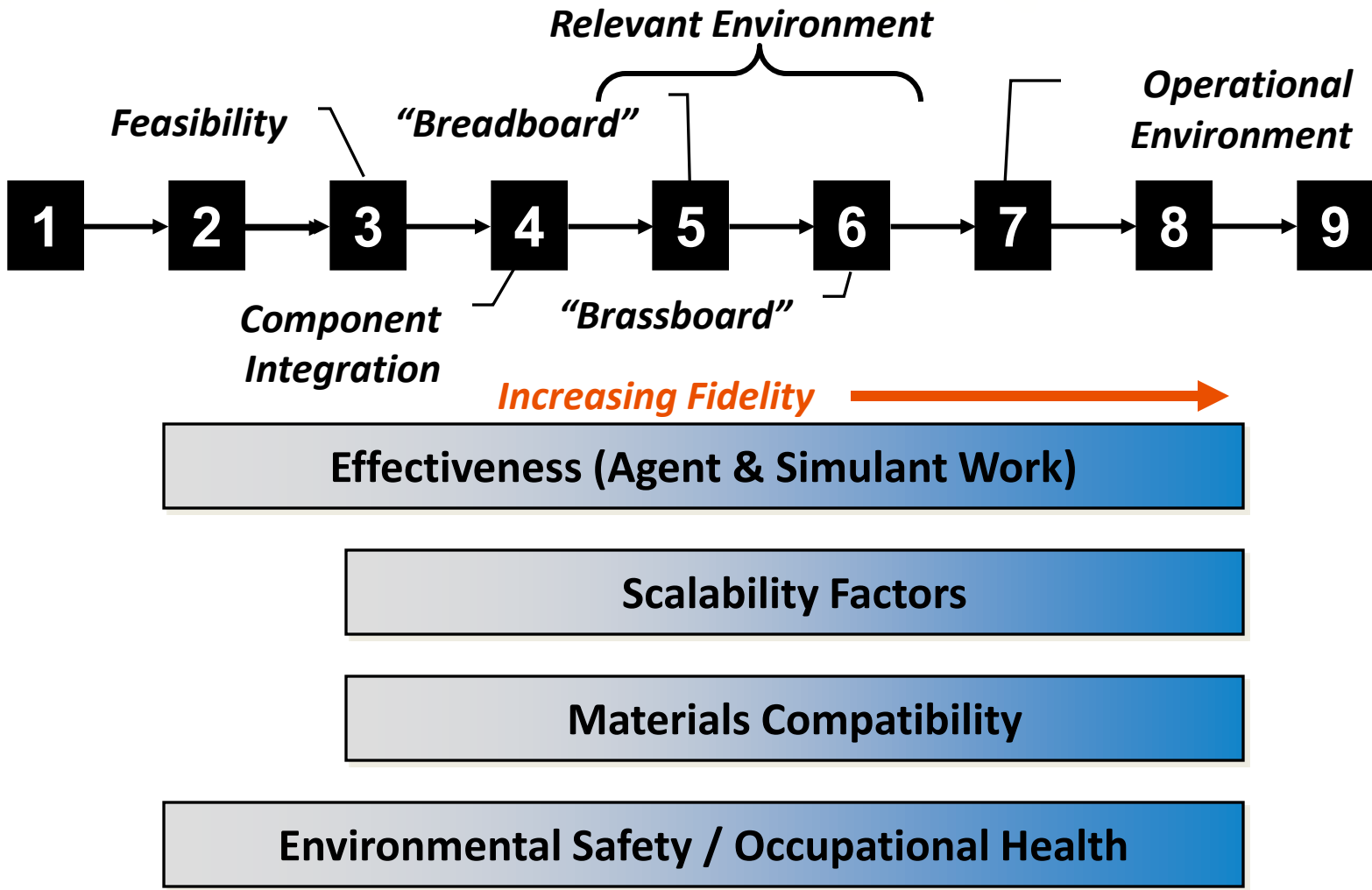
# Multifunctional Materials Enabling Thrust

- Development of dynamic multifunctional materials creates opportunity for chemical and biological defense novel applications
- Particular interest in bioinspired and biomimetic materials
- PHM Focus areas:
  - Crystalline nano-porous framework materials and composites
  - Nano-structured surface morphology
  - Responsive materials
  - Biotic and abiotic interfaces
  - Membranes, laminates and barrier materials





# Technology Development Process





# Focused Innovative Technology (FIT) Programs



- **Formulation of a process for DTRA-RD-CB to focus innovation**
- **Goals:**
  - **Stimulate visionary thinking**
  - **Increase probability of transition and delivery of products and capability to warfighter**
  - **Balance risk and reward across enterprise requirements and need**
  - **Challenge “continuation momentum”**
  - **Foster interdisciplinary/cross-cutting teaming practice**
  - **Encourage STM initiative and community interactions**



# New Start Initiative (2)



- **New Start Questions:**

- What is the vision and how does it relate to JSTO strategy and CBDP mission?
- How is it done today, and what are the limits of current practice?
- What's new in the approach and why will it will be successful?
- If successful, who will care? What difference will it make?
- What are the risks (technological, other) and the payoffs?
- How much will it cost? Over what time?
- What is the needed team composition for managing (CBDP) and executing (industry, academia, gov't) success?
- What are the midterm and final milestones and go-no go decision points to assess progress and success?





# JPM Protection Overview



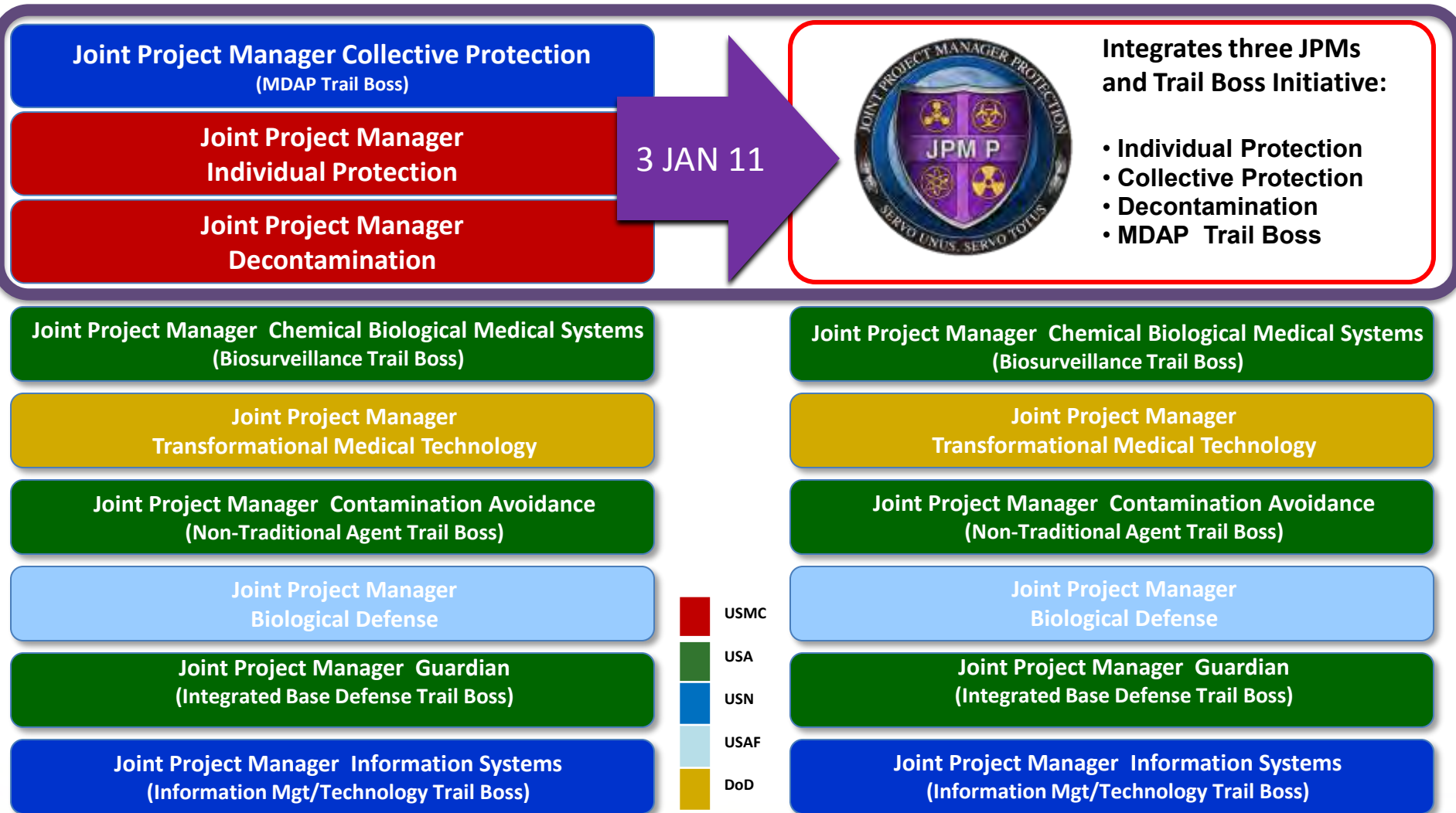


# JPEO-CBD New Organizational Structure Implemented FY11



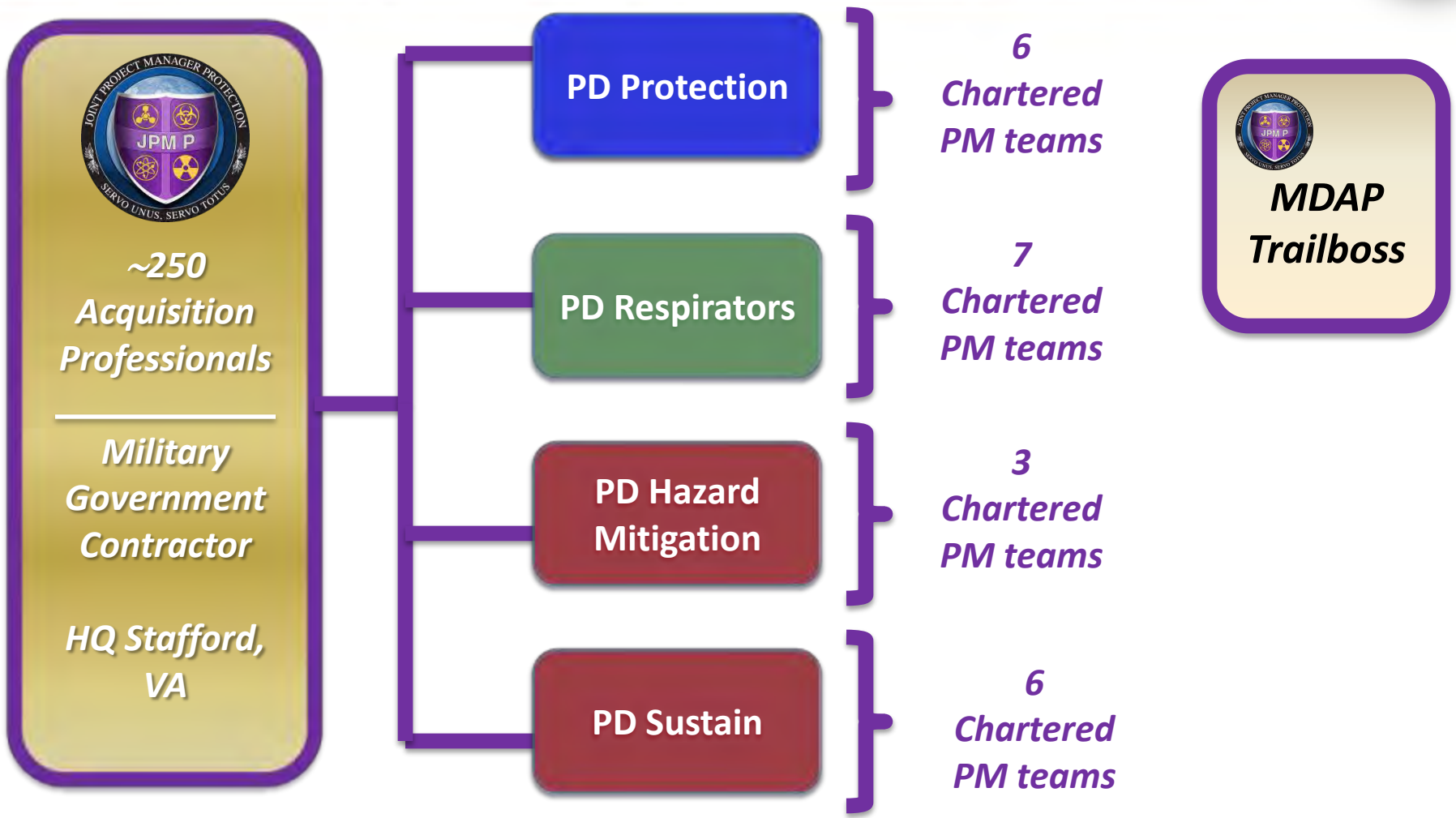
Nine (9)  
Joint Project Managers

Seven (7)  
Joint Project Managers





# JPM Protection Organization



*JPM Protection: A diverse and accomplished workforce drawn from Stafford HQ, NSWC Dahlgren, and ECBC*



# JPM Protection Approach to Future Capability Acquisition



# Transforming Concepts into Capability: Adapting to Change

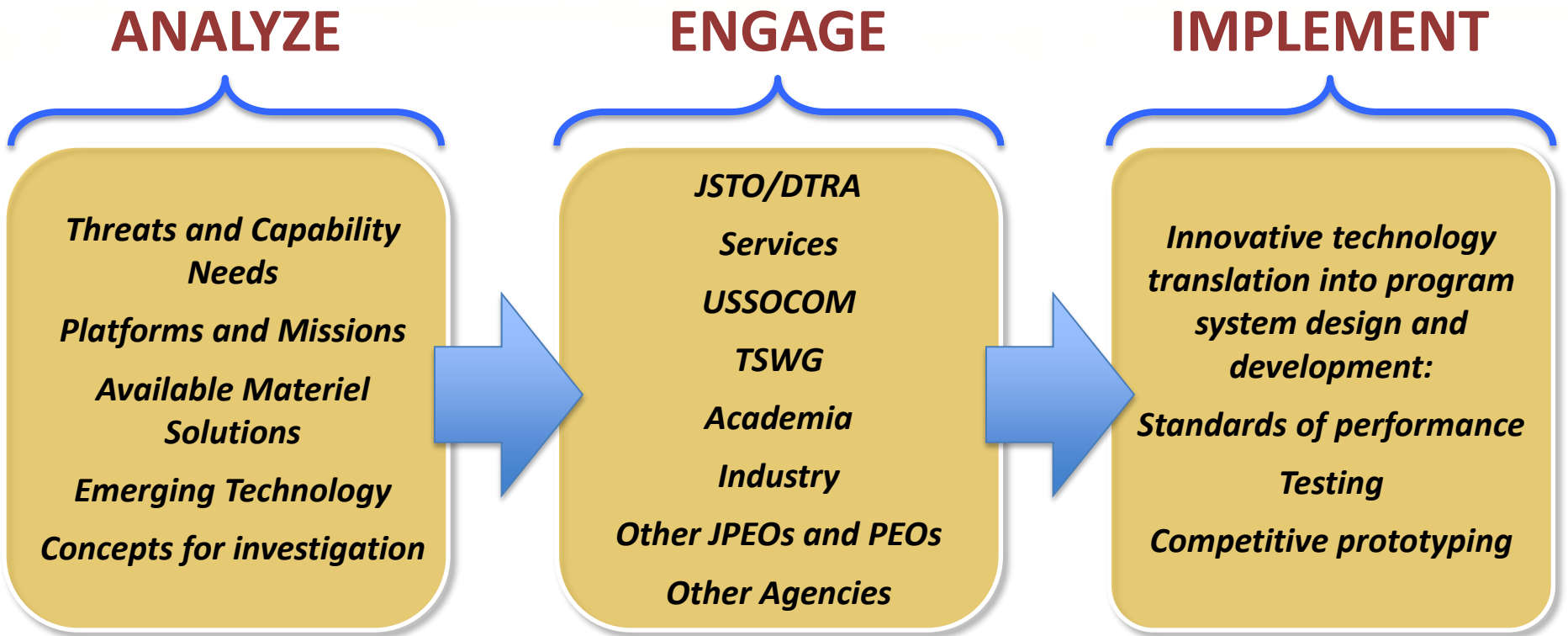


- **DoD focus shift to better buying power and efficiency initiatives**
  - Apply to development from S&T / pre-MS A through sustainment of capability
- **JSTO/JPM Protection partnership adapts to the evolution of new S&T resourcing and execution process**
  - Active engagement in resourcing / execution of projects
    - FIT process
- **At the same time, JPM P:**
  - Capitalizes on successful small scale acquisition (USSOCOM, Special Forces)
  - Pushes boundaries of COTS technology for alternate/multiple uses





# JPM Protection approach to technology development



***Successful technology development depends on identification and effective sponsorship of most promising technologies***



# The Future of CBRN Individual Protection: A mandate to reduce burden



- **Reduced Physiological Burden**
  - New materials combined or engineered to provide optimum
    - protection, lowest possible thermal burden
  - Decrease Breathing Resistance and Weight of filters
- **Broaden the scope of protection**
  - TIC/TIM, Aerosol, Advanced Threats
- **Combine function/capability: ballistic, CBRN, integrated power sources,**
  - detection, monitoring and self-decontamination
- **Low Cost Flame Retardant Materials**
- **Reduced Lens Fogging/Distortion**
- **Increased Field-of-View and Field-of-Regard**
- **Reduce interference with operational platforms and**



***Proposed Solutions:*** *Combat uniform that integrates “basic” CBRN protective capabilities*

- *Modular lightweight add-ons that augment protection and capability in response to specific threat environments as needed*

# The Future of Decon: Smarter, materiel-friendly systems

## Decontamination

- Aircraft Decontamination
- Reduced Logistics
- Increased Throughput
- Advanced Threat Decontamination
- Point of Use Decontaminants
- TIC/TIM Decontamination
- Wound Decontamination
- Human Remains Decon Methods



### ***Proposed Solutions: “Smart decontamination” systems***

- *Sense the presence of agent*
- *Respond and selectively release Decon where needed*
- *Signal Decon status—is it clean?*



# The Future of Collective Protection: New platforms, enhanced capability

## Collective Protection (ColPro)

- Optimize Protection Configuration
  - Balance individual and collective protection options
    - » Aircraft, shipboard, vehicle—optimize solutions, hybridize individual and collective protection
- Integration into new service platforms where feasible
  - Aircraft, Ground Mobile, Shipboard, Buildings, Vehicles
- Capability Sets for Existing, Non-hardened Shelters
  - Fixed site
  - Transportable
- Rapid Insertion of new/proven Technologies to Existing Equipment
  - Reduced costs/logistics and improved manufacturing and performance
  - Reduce power requirements



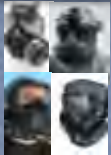
### ***Proposed Solutions:***

- *Integrate advanced ColPro technology into future platforms*
- *Standardize ColPro equipment*
- *Balance ColPro and IP options to reduce warfighter burden*



# Evolution of Advanced Capability

## Respiratory Protection



- M40 Series Mask
- M50 Protective Mask
- M52 JSCESM
- M53 Protective Mask



- JSAM FW
- JSAM RW
- JSAM Apache
- ARPI
- Improved Adsorbents



- Integrated Helmet And Respirator
- MACH Respirator

INTEGRATED  
RESPIRATORY /  
OCULAR

COMM  
AND  
NETWORKING

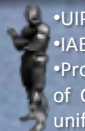
## Individual Protection



- JSLIST
- AP-PPE
- JC3
- JPACE
- Commercial



- UIPE Inc. I



- UIPE Inc. II
- IAE
- Progress toward integration of CBRN protection into duty uniform

INTEGRATED  
ENSEMBLE

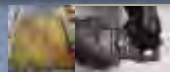
PHYSIOLOGICAL  
MONITORING

BUILD IN  
SENSOR  
TECHNOLOGY

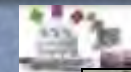
## Hazardous Mitigation



- M26
- Soap and Bleach



- Joint Sensitive Equipment Wipe
- General Purpose Decontamination
- Contamination Indicator/Decon Assurance Spray



- Dial-A-Decon
- Improved Reactive Sorbent
- Assurance Coatings
- Permeable Material Decon
- Effluent Control
- Automated Decon System
- Human Remains Decon

BALLISTIC  
PROTECTION

ON-BOARD  
POWER  
SOURCE

## Collective Protection



- CPFH
- Shipboard
- Mobile Vehicles



- Improved Filtration
- Improved Adsorbents
- JECF



- Carbon Membranes
- Assurance Coatings
- New Platforms
- Novel Containment Systems

REACTIVE  
COLOR  
METRICS  
COATING

SELF  
DECON



- Reactive Airlock Decontamination
- Self Decontaminating Shelter

**Future Vision:**  
**Balanced Options**  
**Affordable Capability**  
**Integrated and Diverse Functions**



**You help us craft  
the Future**

**Current Capability**

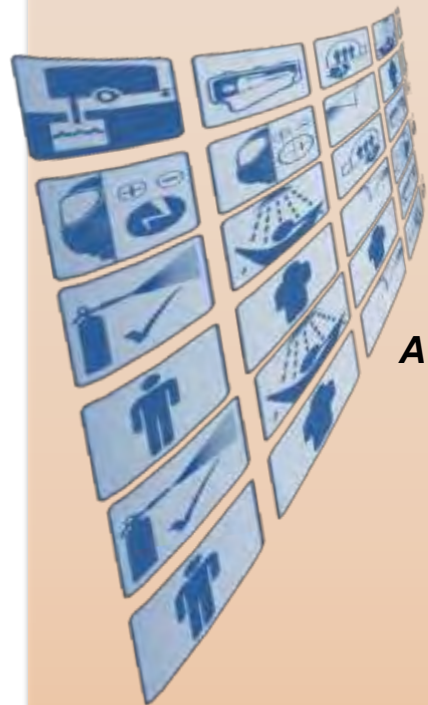
**Next 5 Years**

**5-10 Year Objectives**



# Future Concepts: Balancing the equation

## Decontamination, Individual and Collective Protection Capability Suite

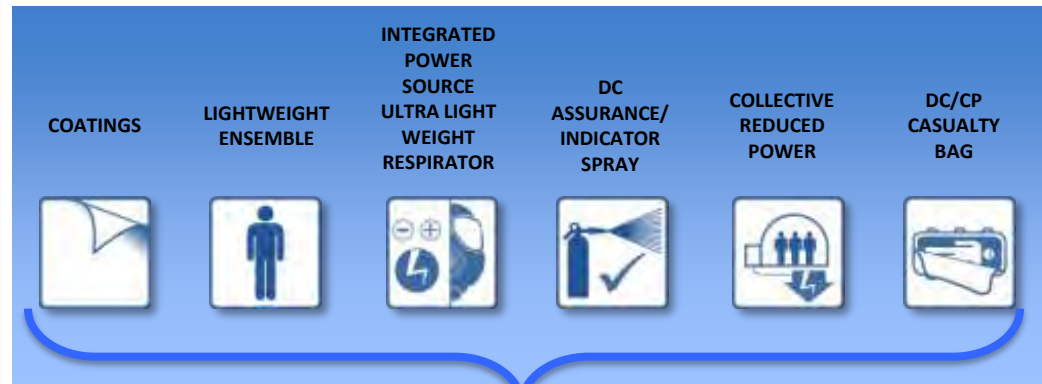


*A menu of capabilities*

*Properties?*



**Choose “Core” Technologies + mission  
specific “Electives” to achieve desired  
capability**



**Mission Specific Solution**



# Balancing the equation—combining core technology and elective enhancements customized for the mission



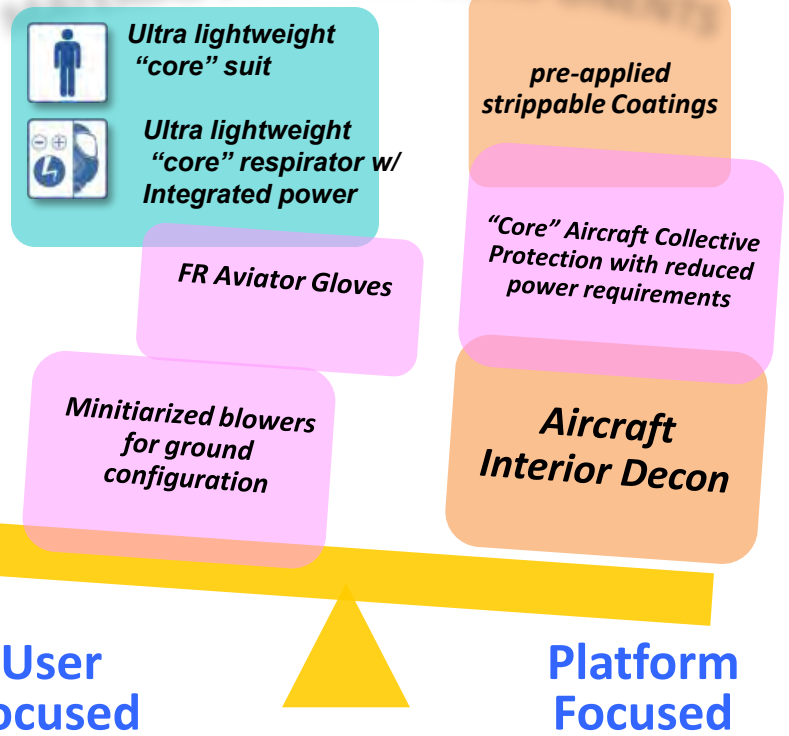
*An Example: Protection and hazard mitigation for a C130 platform and crew*



**+**  
**CBRN**  
**MISSION**



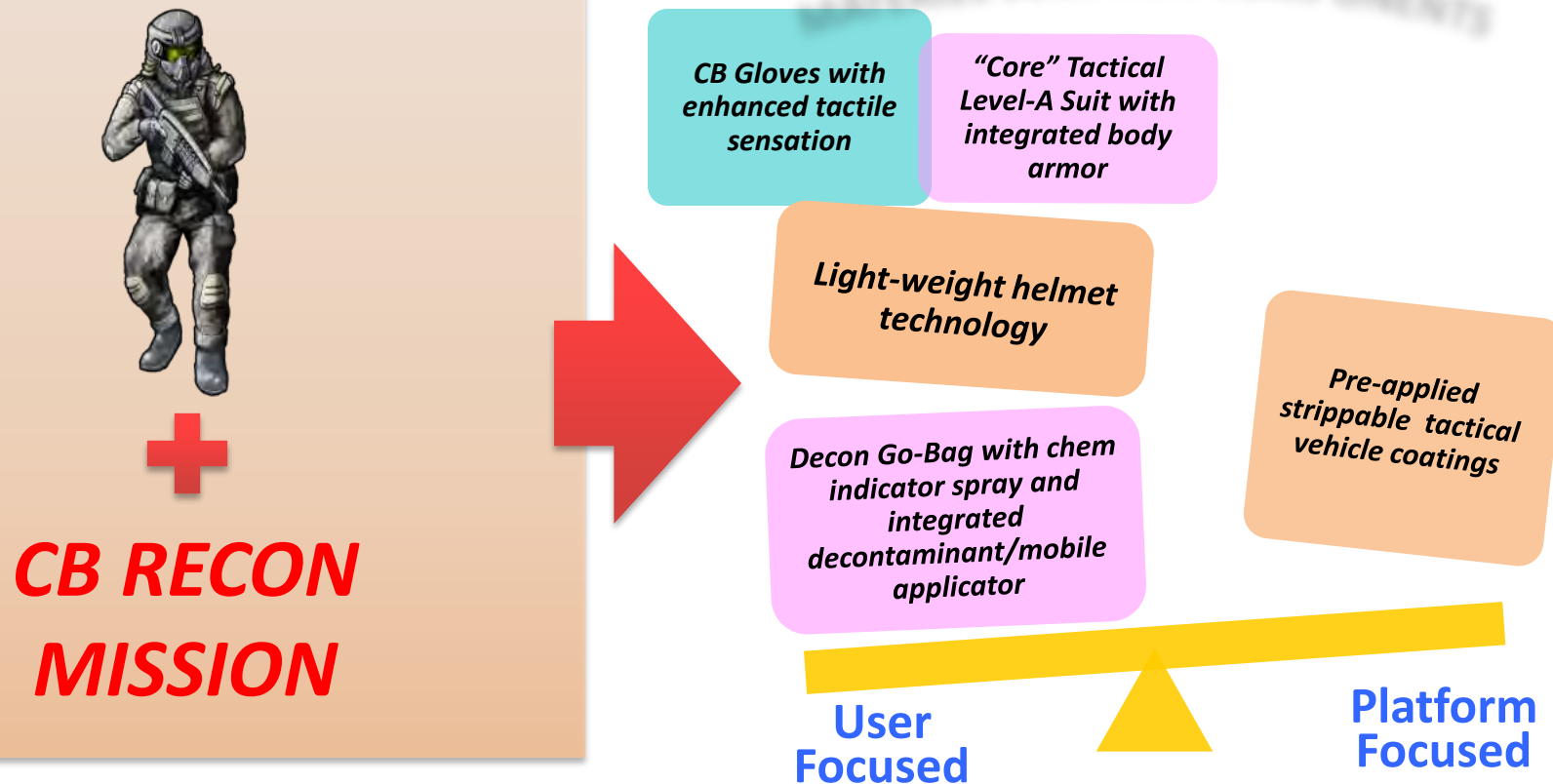
## MATERIAL SOLUTION COMPONENTS



*Platform focused solution set: Achieving a balanced solution by implementing core and elective options from a suite of capability across the decontamination, individual and collective protection commodity areas*

# Future Concepts: Balancing the equation

## *An Example: CB Recon Patrol Mission*



*User focused solution set: Achieving enhanced mission effectiveness while reducing physical and thermal burden to the individual*



# **JPM Protection's Approach to Maintaining Technical Dominance**



- **Active engagement with Industry, Academia, JSTO and other sources of technical innovation**
  - APBI, national conferences, national dialog
  - FIT/SEED process
  - Core investment
- **Capitalize on the breadth of our portfolio and implement measures to increase**
  - Affordability
  - Capability
  - Adaptability
- **The key to our success is effective partnerships to deliver the right operational capability at the right time to our warfighters worldwide**





# **Science and Technology Future Concepts, Strategies and Approaches**





# Hazard Mitigation (HM) Concept

## Immediate

- Individual and operator
- Skin decon; Operator spray-down
- Minimize casualties; save lives
- Limits spread of contamination



## Operational

- Crew and unit
- MOPP gear exchange; Operator wash-down
- Limits contamination spread and exposure
- Temporary relief from MOPP



**Increase early effectiveness**

## Thorough

- Specialized units
- Detailed personnel, equipment decon
- Reduces MOPP level
- Reconstitutes combat power

**More time needed/ Less assets available**

## Suitability Considerations:



**Material Compatibility**



**Logistics**



**Life-Cycle Management**



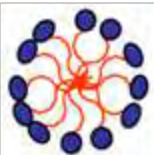


# HM S&T Strategy



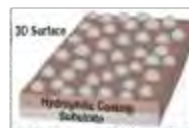
## General Purpose Formulations

Improve and transition formulations that support legacy processes



## Decon System Approaches

Use combinations of complementary technologies to reduce the hazard faster with less outside support



Self-Detoxifying/ Anti-Microbial Surfaces



Directed Energy Approaches



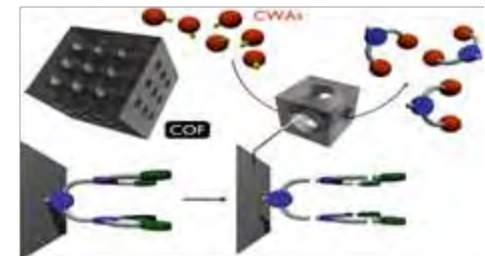
Agent Disclosure



Strippable Coatings

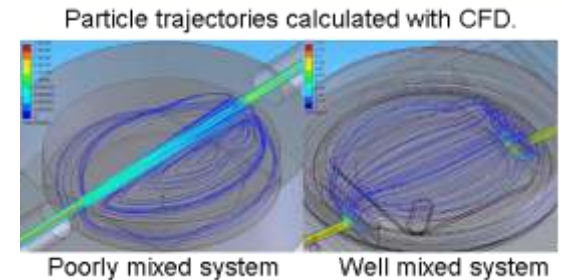
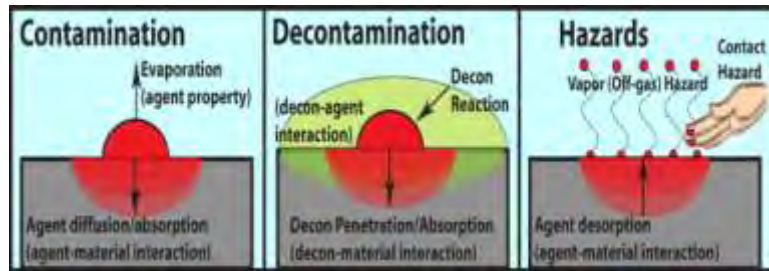
## Smart Hazard Mitigation

Develop revolutionary approaches that sense contamination, respond, and signal



**Goal:** Develop technologies that rapidly reduce the contamination hazard and enable reduction of the Mission-Oriented Protective Posture (MOPP) level, while reducing life-cycle costs and the logistical burden.

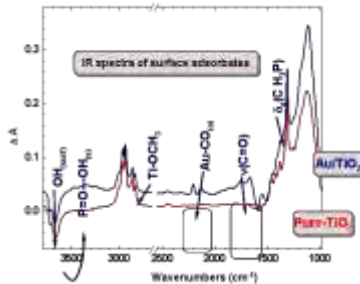
# Improved Test Methods



**Methods to address interactions together and separately**

**Correcting dynamics in flow cell**

**Test Methodologies:** Completed and transitioned “source-book” and small-item decon methodologies to improve standards of measuring and analyzing agent residuals and by-products

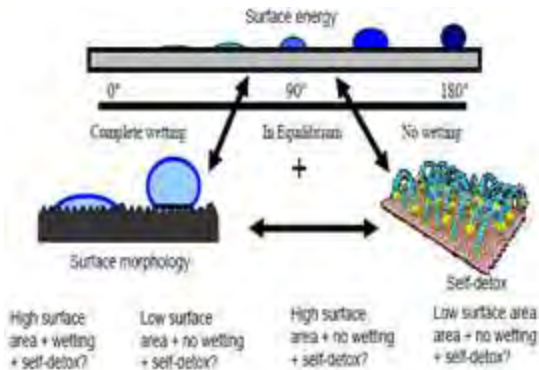


**New capability to analyze surface interactions**

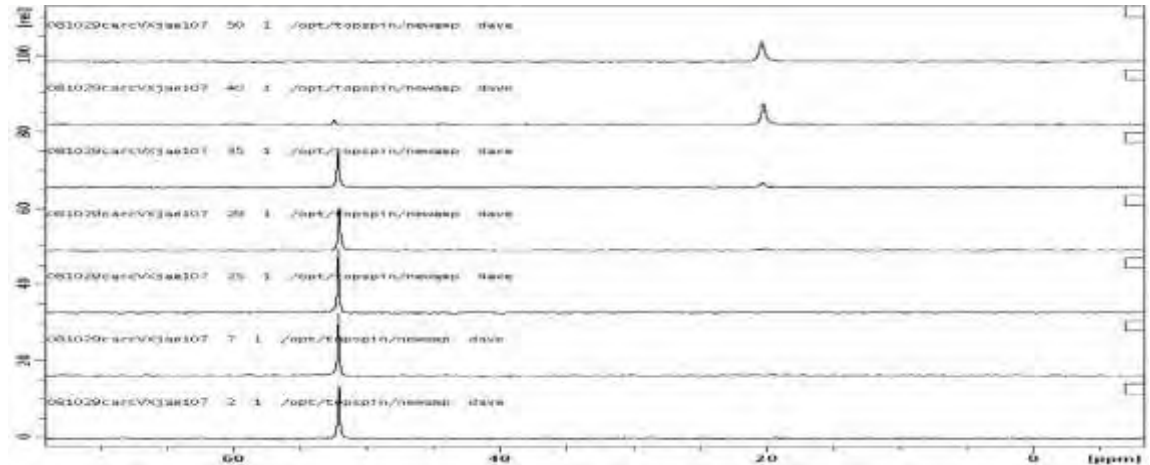
**Complex surface agent drop spread**



# Coatings



**Examining effects of surface energy and self-detoxifying moieties**



**Solid-state NMR showing reaction of 1 µL VX to EMPA**

## Self-Detoxifying Surfaces:

- Success ranges from complete decon to a means of supplementing normal decontamination by accelerating the degradation of residuals
- **Currently seeking technologies to improve agent resistance of chemical agents and that promote rapid-weathering of residuals**

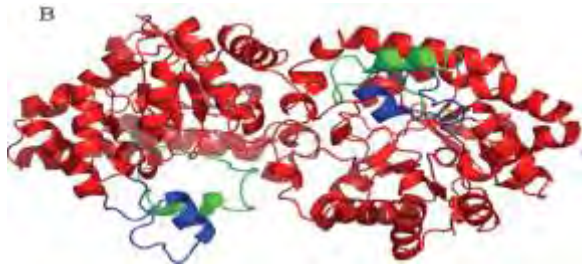
# "Dial-a-Decon"



## **Paradigm shift:**

- *Depart from the "one pot" requirement*
- *Focus on optimal approaches for each agent and condition*
- *Optimize processes and point-of-use formulation adjustments to minimize logistics*

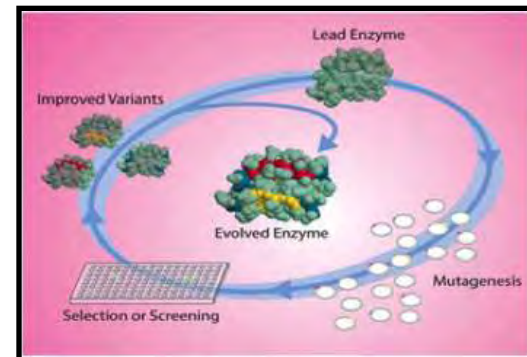
# Enzyme-Based Mild Decontamination



**Structure of OPH taken from Reeves et al. 2008**



**Strong oxidants cannot be used on aircraft**



**Computationally designed directed evolution**

**Enzyme Stabilization:** Develop deployable, shelf/pot-stable enzyme based decontaminates by pursuing multiple approaches that include:

- Encapsulating the OPH enzyme into nano-porous materials
- Computationally directed and random mutagenesis of OPH enzymes
- **Seeking concepts for formulation, scaling, and manufacturing**





# Wide-Area Decontamination of Anthrax



- **Objective:** *Develop a new decontaminant/spore germinant to mitigate the effects of wide area dissemination of *Bacillus anthracis* spores providing a militarily relevant capability*
- **Metrics for success:** *Overcome limits in current practice*
  - *Logistics: „Green“, rapidly deployable decontaminant*
  - *Efficacy: 99.99% spore inactivation in relevant heterogeneous environments*
  - *Cost: Lower total cleanup costs than other decontaminants for wide area decon*
- **Other potential payoffs:** *Detection, antimicrobial coatings, enzyme stability and production*



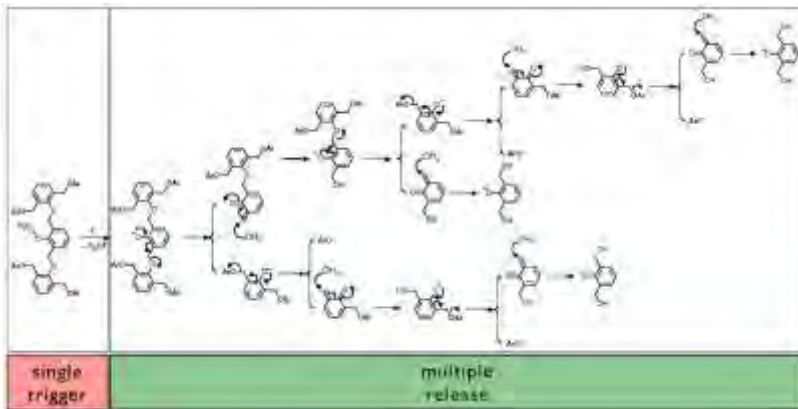
S. Korea Sea Port Of Debarkation  
RSOI Exercise



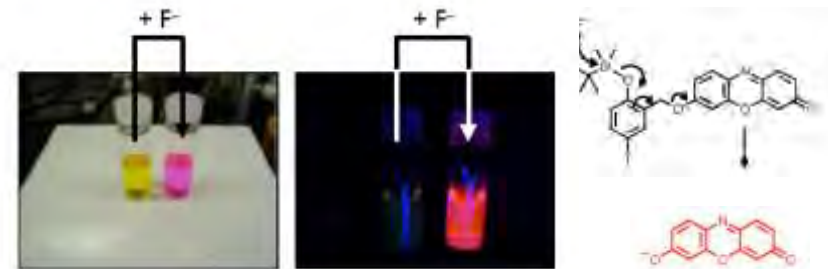
Brentwood Postal Facility  
\$130M over 2.2 years



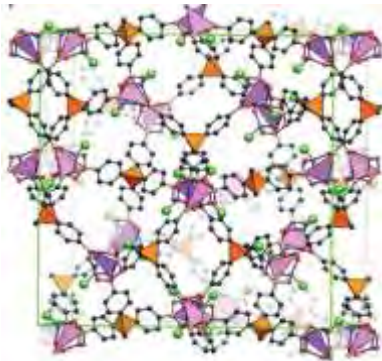
# Novel Approaches



**Triggered chain reactions act as molecular switches**



**Released fluorophore provides a signal function**

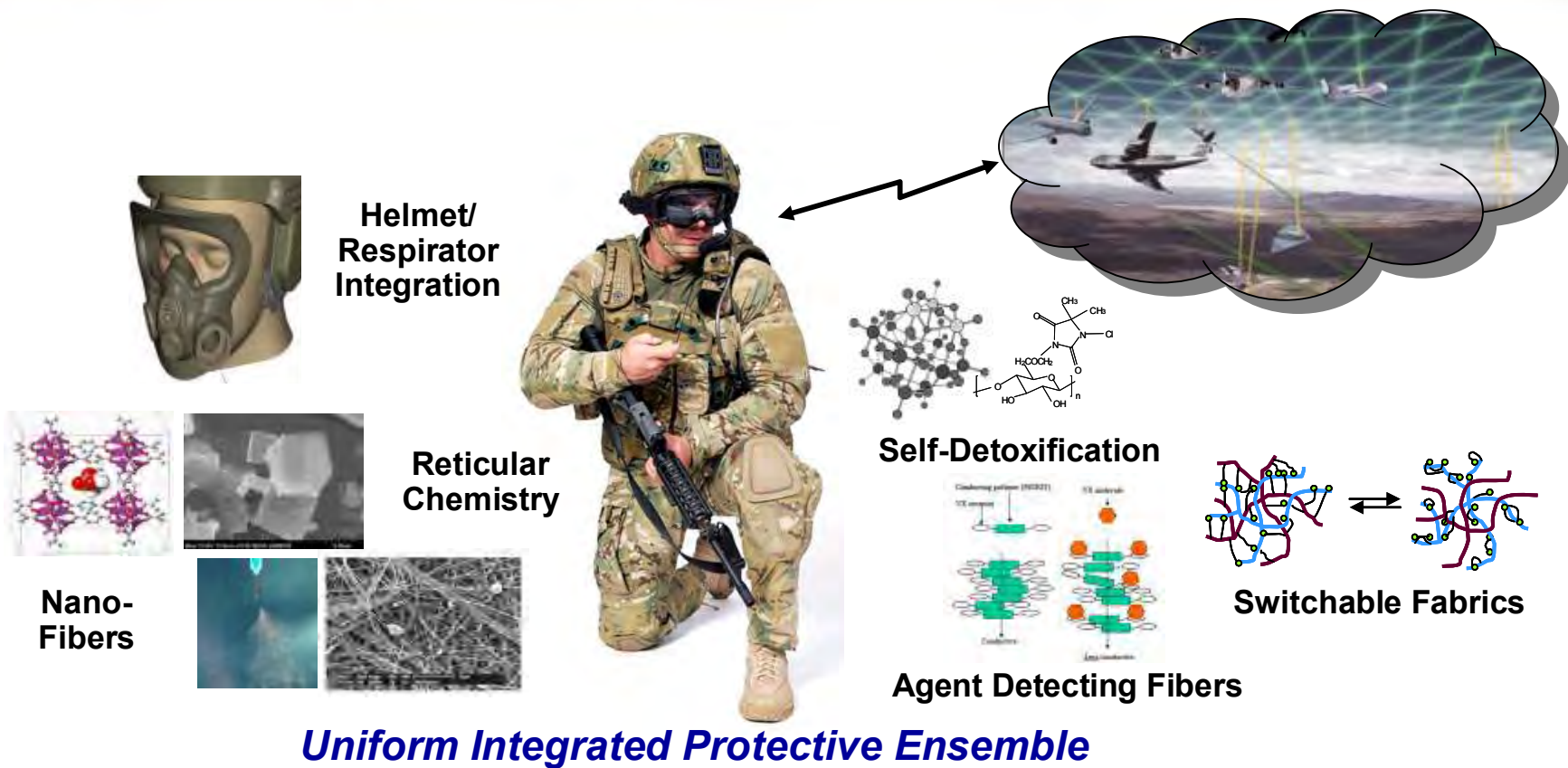


**Nano-porous materials provide scaffolding**

**Smart Hazard Mitigation:** Chemical systems that sense, respond, and signal:

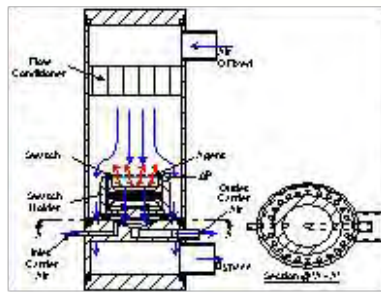
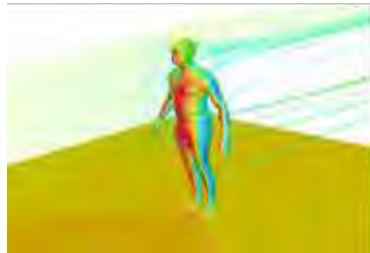
- Follows a modern therapeutic concept of releasing treatment only to the point where needed
- **Seeking novel concepts for proof-of-principle in FY12**

# Individual Protection Concept



- Goals:**
- Reduced thermal burden – target thermal burden to Combat Uniform
  - Protect against aerosols and emerging threats
  - Integrate CB ensemble with warfighter ensemble to reduce burden

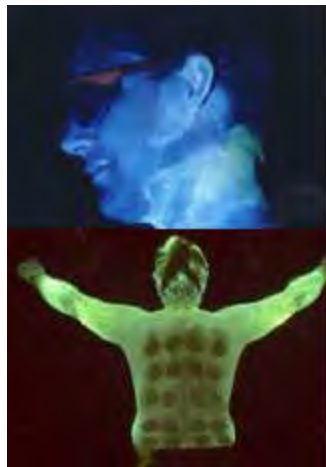
# Improved Test Methods



## ***Fabric swatch test method: Chemical and Biological Agent Resistance Test (CBART)***



## ***Field condition quantification: Pressure and Motion Suits***



## ***Whole system assessment: Real-Time MIST and Aerosol System Test***

### ***Test Methodologies:***

- *Material swatch*
- *Man-in-simulant*
- *Whole system*

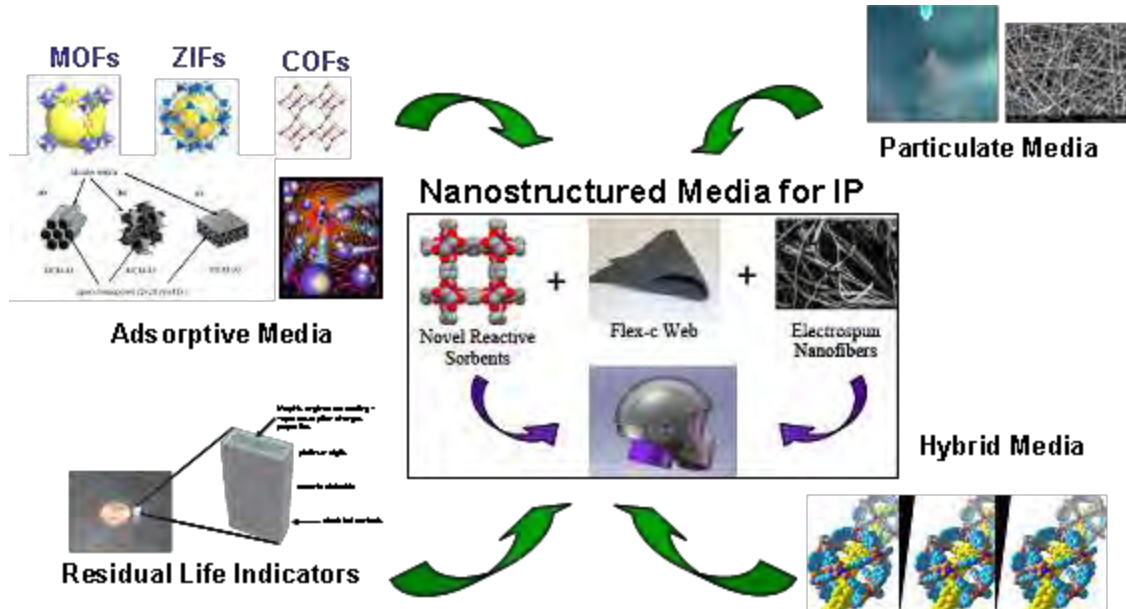


# Replace Traditional Filter Media

Exploit the leading edge of material science with a focus on nanostructured materials; increase performance against poorly adsorbed volatile compounds



Vol. 86: 34,  
Aug 25, 2008

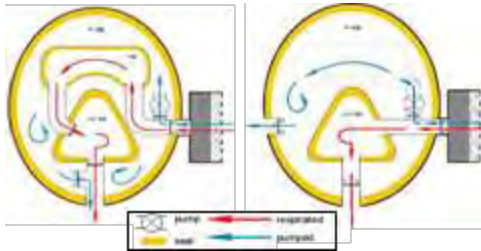


**Low-Resistance, Low-Profile Air Filtration:** Develop families of materials that will replace traditional media, such as activated carbon:

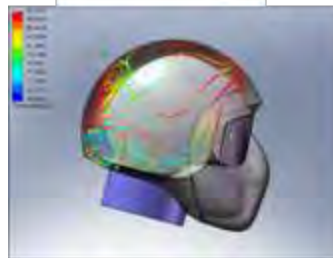
- Seeking novel ideas for fundamental research and material discovery
- Scaling and manufacturing of novel materials



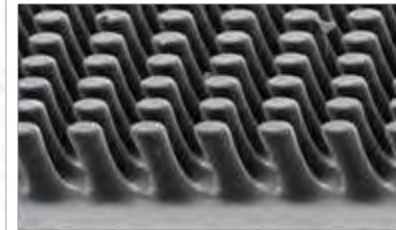
# Novel Respirator Concepts



**Dual-cavity technology**



**Analysis of alternatives**



**Enhanced seal technologies**

**Low-Burden Respirator:** Leverage demonstration to gather data on alternate design concepts and technology enhancements

**Seeking concepts for scalable protection from APR to SCBA**

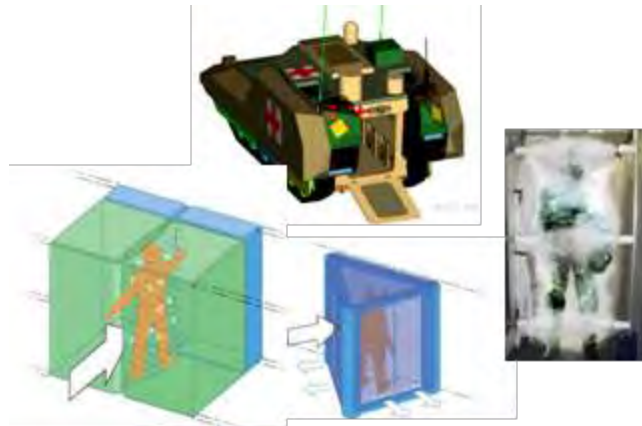




# Collective Protection Concept



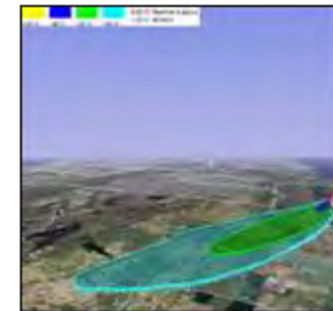
Follow a systems approach to enhance survivability through contamination control (stopping contamination from entering the clean area) and contamination management (reducing or sequestering it after entry)



**Contamination Control**



**Contamination Management**



**Survivability Enhancement**

**Goal:** Reduce the logistical burden and cost associated with collective protection; provide scalable approaches to manage risk and enhance survivability.

# Improved Test Methods



*Field simulant test platform*



*ColPro chamber test*



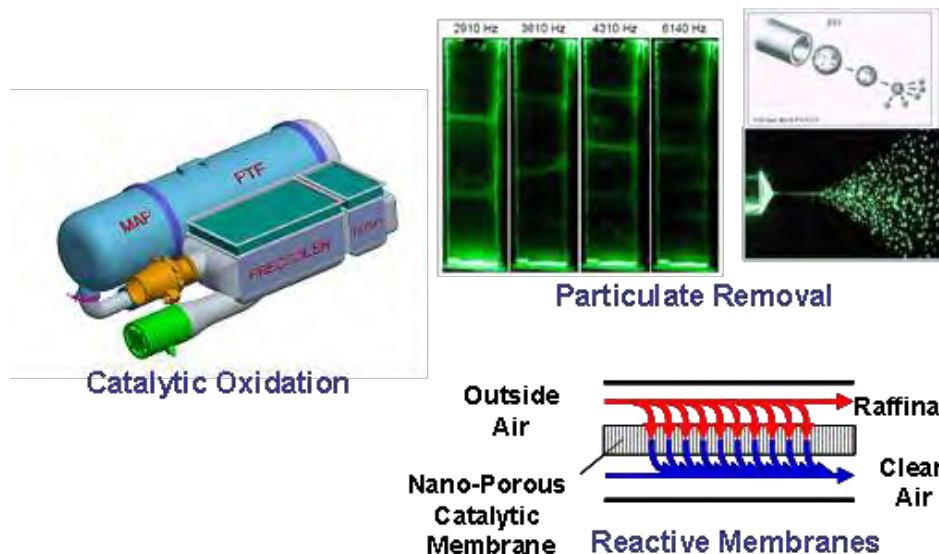
*Novel closure test*

***Test Methodologies:*** Transitioned updated methods:

- *Air filtration*
- *Closures*
- *Whole systems simulant test*

# Reduced Cost Air Filtration

Develop filtration technologies that minimize or eliminate the need for expendable media; optimize size, weight, power demand, and costs



**Goal:** Develop approaches that reduce or eliminate the need for expendable media: Increase the affordability of air filtration especially applied to buildings, vehicles, vessels, and platforms

**Seeking novel concepts to support affordable building protection**



# PHM S&T Funding (\$M)



YEAR/ RTDE	FY12	FY13	FY14	FY15	FY16	TOTAL FY12-16
BA2 PHM	18,270	16,863	12,354	12,499	15,299	75,285
BA2 PHM NTA	5,982	4,608	3,090	3,126	7,972	24,778
BA3 PHM	3,711	3,733	5,735	5,824	5,959	24,962
BA3 PHM NTA	---	1,034	2,823	2,945	3,012	9,814
TOTAL BUDGET	27,963	26,238	24,002	24,394	32,242	134,839

**Total Protection S&T Funds reflects the FY11 President's Budget submission and includes Individual and Collective Protection and Hazard Mitigation**





# Upcoming S&T Business Opportunities



<b><u>Solicitation/Opportunity</u></b>	<b><u>Time Period</u></b>
<b>DTRA Chemical &amp; Biological Technologies Directorate FY12-13 2-yr Broad Agency Announcement (BAA) (HDTRA1-12-CHEM-BIO-BAA)</b>  Extramural (non-US Government) only, leading to contract and grant awards Additional topics may be added in the future; continue to monitor	Multiple calls for proposals. Amendments to be issued as required.
<b>Small Business Innovation Research (SBIR) program</b>  Opportunity for Small Business engagement in S&T program Lead to contract and grant awards <ul style="list-style-type: none"><li>• <a href="http://www.dodsbir.net/solicitation/default.htm">http://www.dodsbir.net/solicitation/default.htm</a></li></ul>	April 2012 (DoD FY12.2 SBIR Solicitation)
<b>DTRA R&amp;D Innovation Office – Science and Technology New Initiatives BAA (HDTRA1-11-16-RDIS-BAA)</b>	Open Continuously
<b>DTRA Fundamental Research to Counter Weapons of Mass Destruction BAA (HDTRA1-09-14-FRCWMD-BAA)</b>	Open Continuously
<b>DTRA Basic Research for Combating Weapons of Mass Destruction (C-WMD) (HDTRA1-11-16-BRCWMD-BAA) GRANTS ONLY</b>  <ul style="list-style-type: none"><li>• <a href="http://www.grants.gov">http://www.grants.gov</a></li></ul>	Annual call planned for December 2011





# JPM P Resources - Funding



APPN	FY12 (\$K)	FY13 (\$K)	FY14 (\$K)	FY15 (\$K)	FY16 (\$K)	FY12-16 (\$K)
BA4	\$38,737	\$31,696	\$10,091	\$14,102	\$17,169	\$111,795
BA5	\$27,167	\$35,468	\$37,154	\$23,370	\$14,373	\$137,532
BA7	\$0	\$0	\$494	\$2,467	\$1,470	\$4,431
PROC	\$87,256	\$108,311	\$157,014	\$225,090	\$241,558	\$817,229
OPA	\$6,119	\$5,000	\$5,000	\$4,997	\$55,327	\$76,443
TOTAL	\$ 159,279	\$180,475	\$ 209,753	\$ 270,026	\$ 329,897	\$1,147,430

- POM 12-16 supports total life cycle management for approximately 40 programs/items from “cradle to grave” through RDT&E and Procurement dollars



# JPM P Business Opportunities



PROGRAM	DESCRIPTION	YEAR
Joint Platform Interior Decontamination (JPID)	Request for Proposal Release to Industry	FY11
Contaminated Human Remains Pouch (CHRP)	Request for Proposal Release to Industry	FY12
General Purpose Decontaminants (GPD)	Request for Proposal Release to Industry	FY12
Joint Sensitive Equipment Wipe (JSEW)	Request for Proposal Release to Industry	FY12
Contamination Indicator Decontamination Assurance System (CIDAS)	Request for Proposal Release to Industry	FY13
Future/Advanced Filtration	Request for Proposal Potential Release to Industry	FY14
Uniform Integrated Protection Ensemble (UIPE) Increment 2	Request for Proposal Release to Industry	FY15/16



# S&T Points of Contact



- **JSTO CBD Senior S&T Manager for Protection and Hazard Mitigation**  
Charles Bass, Jr., Ph.D., P.E.  
(703) 767-3371  
[charles.bass@dtra.mil](mailto:charles.bass@dtra.mil)
- **Individual Protection S&T Manager**  
Salvatore Clementi  
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[salvatore.clementi@dtra.mil](mailto:salvatore.clementi@dtra.mil)
- **Air Purification and Collective Protection S&T Manager**  
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[william.buechter@dtra.mil](mailto:william.buechter@dtra.mil)
- **Hazard Mitigation S&T Manager**  
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Glenn Lawson, Ph.D.  
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- **Novel Materials S&T Manager**  
Tracee Harris  
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[tracee.harris@dtra.mil](mailto:tracee.harris@dtra.mil)



# JPM P Points of Contact



- **Joint Project Manager – Individual Protection**
  - Mr. William D. Hartzell
  - (703) 617-2444
  - [william.hartzell@usmc.mil](mailto:william.hartzell@usmc.mil)
- **Deputy Joint Project Manager – Individual Protection**
  - Mr. Mike Stevens
  - (703) 617-2440
  - [joseph.m.stevens@usmc.mil](mailto:joseph.m.stevens@usmc.mil)
- **Director, Future Acquisition (Acting)**
  - Mr. Steve Kaminsky
  - (410) 436-6533
  - [steven.kaminsky@us.army.mil](mailto:steven.kaminsky@us.army.mil)
- **Director, Systems Engineering**
  - Mr. Chris Rok
  - (703) 617-2481
  - [christopher.rok@us.army.mil](mailto:christopher.rok@us.army.mil)
- **Director, Test & Evaluation**
  - Dr. Gene Stark
  - (703) 617-2439
  - [gene.stark@usmc.mil](mailto:gene.stark@usmc.mil)





**Questions/Comments?**





# NBC CONTAMINATION AVOIDANCE

September 7, 2011

## Advanced Planning Briefing to Industry

**COL Daniel J. McCormick**  
**JPM NBC CONTAMINATION AVOIDANCE**  
**Joint Program Executive Office for**  
**Chemical and Biological Defense**

**DR. NGAI WONG**  
**SSTM NBC CONTAMINATION AVOIDANCE**  
**Joint Science and Technology Office**  
**for Chemical and Biological Defense**  
***ngai.wong@dtra.mil***



# Outline



- **Overview**
- **Reconnaissance and Platform Integration**
  - Science and Technology Challenges
  - Warfighter Needs / Program Overview / Acquisition Strategy
- **Sensors**
  - Science and Technology Challenges
  - Warfighter Needs / Program Overview / Acquisition Strategy
- **Test Infrastructure**
  - Science and Technology Challenges
  - Warfighter Needs / Program Overview / Acquisition Strategy
- **Schedule / Funding**
- **Upcoming Business Opportunities**
- **Contacts**



# Overview



## S&T

- **Vision**

- We will nurture a vibrant S&T organization that **CREATES** programmatic vision in **COLLABORATION** with intramural and extramural communities, and **COMMUNICATES** impact to the Warfighter as revolutionary products and capabilities are achieved.

- **Mission**

- To invest in transformational ideas, innovative people, and actionable technology development for Chemical Biological Defense solutions
- 

## JPM NBC CA

- **Strategic Vision**

- Equip and sustain the world's most capable, powerful, and respected Joint Forces with world class chemical, biological and radiological contamination avoidance products, capabilities, and services.

- **Mission**

- The Joint Project Management Team for Nuclear, Biological, and Chemical Contamination Avoidance is responsible for the development, production, integration, testing, and fielding of NBC detection, obscuration, and reconnaissance systems. We ensure that our system developments, integration efforts and services focus on the Joint Warfighters' needs within cost, schedule, performance and risk.




# JPM NBC CA Organization



- Military
- Core Civilian
- Matrix Civilian
- Contractor
- Other



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Executive Assistant  
NBC Contamination Avoidance  
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**Sharon M. Angelucci**  
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# Reconnaissance and Platform Integration





# Joint Product Manager Reconnaissance and Platform Integration

- Military
- Core Civilian
- Matrix Civilian
- Contractor
- Other





# DR/MS SKO



- **S&T Needs and Technical Challenges**

- **Non-textbook Algorithms in Signal Processing and Decision Logic**
- **Data Fusion**
  - **Organization of Data to Support Decision Making at Multiple Levels of Leadership**
- **High Performance, Low Power, Mass Produced Components**
- **Integration of Cutting Edge Technology into Harsh Environments with Sufficient Independent Testing**
- **First Principle Models on Technologies Linked with Engineering Principles to Provide a Virtual System**
- **Constant Evolutionary Improvements in Technology; How to Decide When to Continue or Terminate**

# DR SKO/DR SKO II

## DR SKO:

- Set of mission specific kits to provide full spectrum CBRNE dismounted reconnaissance capability
- Detection and identification
  - Volatile organic compounds
  - Toxic industrial chemicals/materials
  - CWAs and BWAs
  - Oxygen levels & combustible gases
- Individual personal protective equipment
- Decontamination equipment
- Marking, sampling, and reporting

## DR SKO II adds:

- Emerging Threats
- Unmanned Capabilities
- Net-centric communications



## DR SKO Events:

- |            |        |
|------------|--------|
| • MS C     | 1QFY13 |
| • FRP      | 1QFY14 |
| • IOC (N)  | 4QFY14 |
| • IOC (AF) | 3QFY15 |
| • IOC (A)  | 4QFY15 |
| • IOC (MC) | 2QFY16 |
| • FOC      | 2QFY17 |

## DR SKO II Events:

- |        |        |
|--------|--------|
| • MDD  | 2QFY14 |
| • MS A | 2QFY15 |
| • MS B | 3QFY16 |

## Status / Strategy

- Acquisition Strategy / Status
  - Single Step to Full capability
  - GOTS/COTS NDI
- Service Quantities
  - Air Force: 45
  - Army: 273
  - Navy: 11
  - Marine Corps: 27



# Summary



- **The program is looking for COTS/NDI systems for rapid integration into SKO**
- **Goal: insert the latest proven technology into the SKO**
  - Technology needs to have independent test data; products already certified/approved by other Service program Offices a plus
  - Change SKO based on Increased Capability and Change in Threat
- **Government is always looking for:**
  - Qualified Personnel Protection Ensembles
  - Intrinsically Safe electronics
  - NTA detection, protection, decontamination
  - “Rugged” sensors (operate in extreme environments)
  - Common batteries/longer batter life
  - Multi-functional sensors
  - Enhanced Reliability, Availability and Maintainability systems
  - Robotics and net-centricity





# CBRN Contractor Logistics Support



## ◆ Description:

- CBRN CLS Contract
- Provides CLS to units/sites world wide for Chemical and Biological Detection Equipment
- JPM NBC CA manages contract

## ◆ Systems Supported:

- Joint Portal Shield (JPS)
- P3I Biological Integrated Detection System (Retired)
- Joint Biological Point Detection System (JBPDS)
- Joint Biological Stand-off Detection System (JBSDS)
- Fox NBC Reconnaissance System
- CBRN Dismounted Reconnaissance System (DRS)
- Advanced Threat CBRN Dismounted Reconnaissance System (AT-DRS)

- ◆ **Features:** Provides one source for support of multiple CBRN systems

- ◆ **Users:** U.S. Army, USAR, National Guard, USAF and Navy







# Summary



- **Seeking innovative cost-effective contractor logistics support strategies for low density, highly complex CBRN systems deployed world-wide**
- **Current Contract**
  - Prime Contractor: Battelle Memorial Institute
  - Contract Number: W911SE-07-D-0011/DG01
  - Award Date: 3 Dec 07      Expiration Date: 31 Dec 12
  - Program Management Office: JPM NBC CA
  - Contracting Office: ACC-Warren
- **Follow-on Contract** (*Projected, Subject to Change*)
  - Full and Open Competition
  - Multiple-year Contract (1 year + renewal options)
  - Industry Day: 1QFY2012
  - Draft Request for Proposal: 1QFY2012
  - Release RFP: 2QFY2012
  - Tentative Award Date: 4QFY2012



# PD Sensor

# Product Director Sensor





# Next Generation Chemical Point Detectors



- **S&T Needs and Technical Challenges**
  - **Next Generation Chemical Point Detector**
    - Expand the Number of Detectable Compounds
    - Vapor, Liquid, and Solids
    - Reduction of False Alarm Rates; Improved Selectivity
    - Increase Sensitivity
  
- **S&T Capability Strategy**
  - **Micro-Electro-Mechanical Systems (MEMS) Concepts**
    - MEMS Fourier Transform Infrared (FTIR) (spectroscopy), Gas Chromatograph (GC), Mass Spec
  - **Improve Component Performance**
  - **Single Particle Flow thru Spectroscopy**



# Next Generation Chemical Point Detectors

## ◆ Description:

- Detect & Identify Non-Traditional Agents, CWAs, TICs, in Air and on Surfaces
- Improve CWA /TIC Selectivity and Sensitivity on Multiple Platforms and Personnel (M4E1 JCAD Capabilities + Ships & Aircraft)
- Increase Detectable TIC Compounds in Multiple Environments
- Passive Defense/Detect to Warn & Protect (Support Unmasking/Verify Collective Protection), Verify Decontamination
- Consequence Management/Survey & Reconnaissance
- WMD Interdiction & WMD Elimination/Sensitive Site Assessment
- Provide a Combination of Handheld, Mountable and/or Portable Detection of Broad Spectrum Threats in air and on surfaces

## ◆ Events:

- FY 11/12 - M3TD Tech Assessment
- FY 11/12 - MDD
- FY 12 - AoA
- FY 12/13 - MS A, Industry Day and Draft RFP
- Mid-FY 13 - Contract Award

## ◆ Strategy

- No COTS/NDI Technologies available to meet entire NGCPD requirements
- M3TD effort IDs available tech; assesses application to NGCPD, feeds AOAs
- CBDS and NTAD / NTA RFI informs NGCPD
- NGCPD develops NTA Detection; and provides NTA detection capability to MS SKO

## ◆ Requirements Status

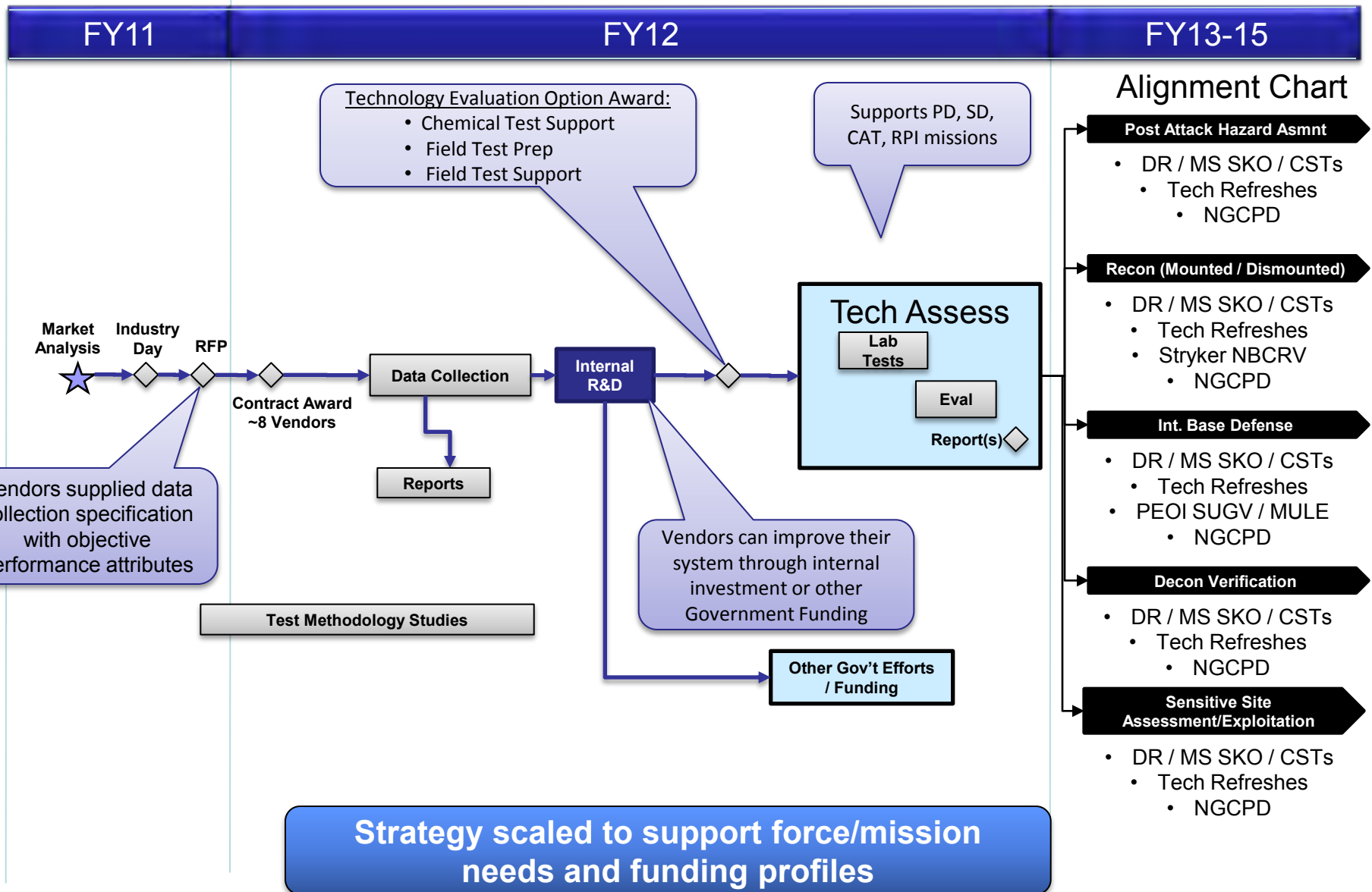
- ICD FEB 06

## ◆ Acquisition Strategy / Status

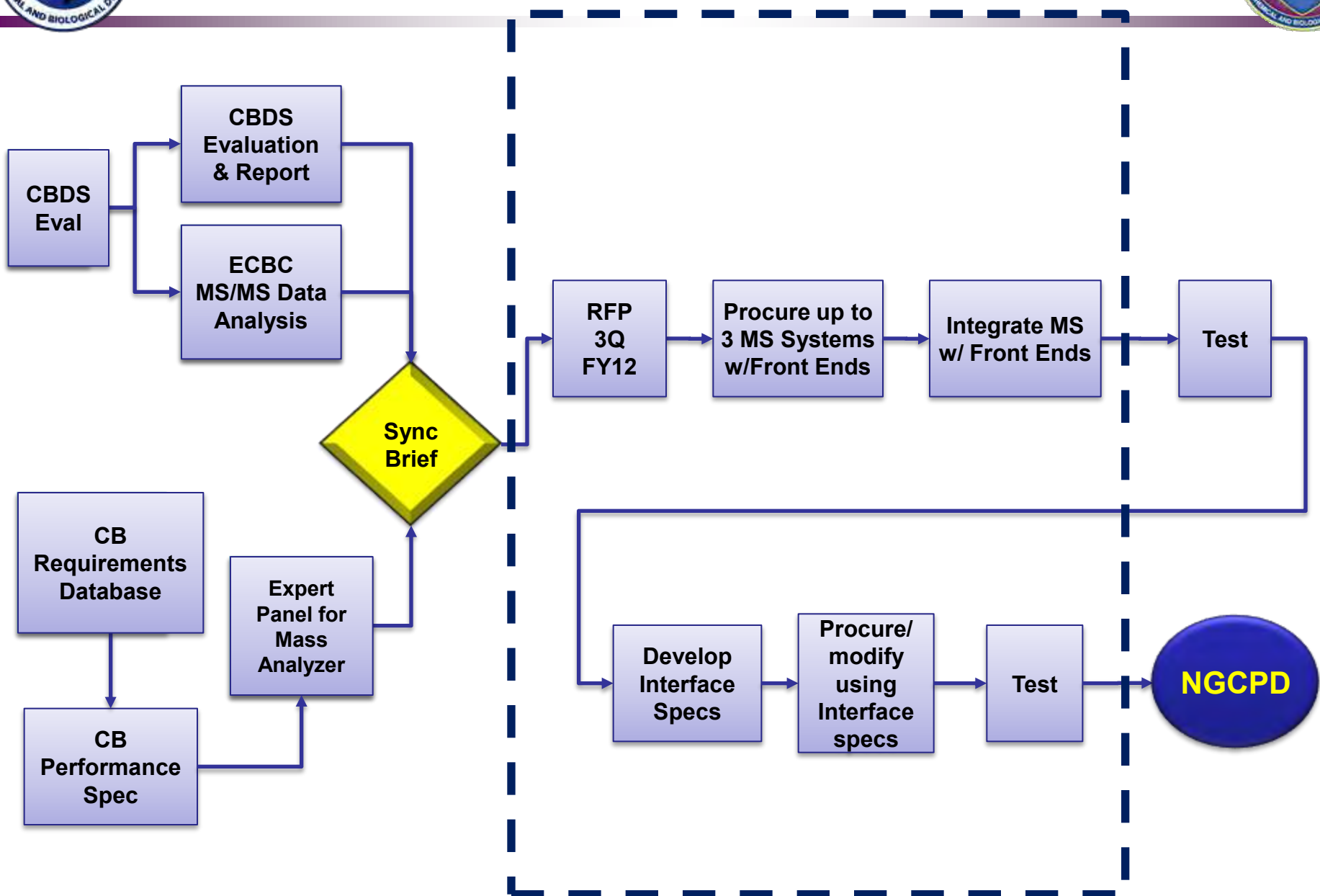
- Leverage M3TD effort
- Full and Open Competitive Development Contracts (FY13)
- Follow on Paths Being Considered
  - Options for EMD, LRIP, and FRP
  - Re-compete at EMD – Requires independent data
  - Re-compete at LRIP – Using government TDP



# M3TD Execution Strategy



# Future Opportunities





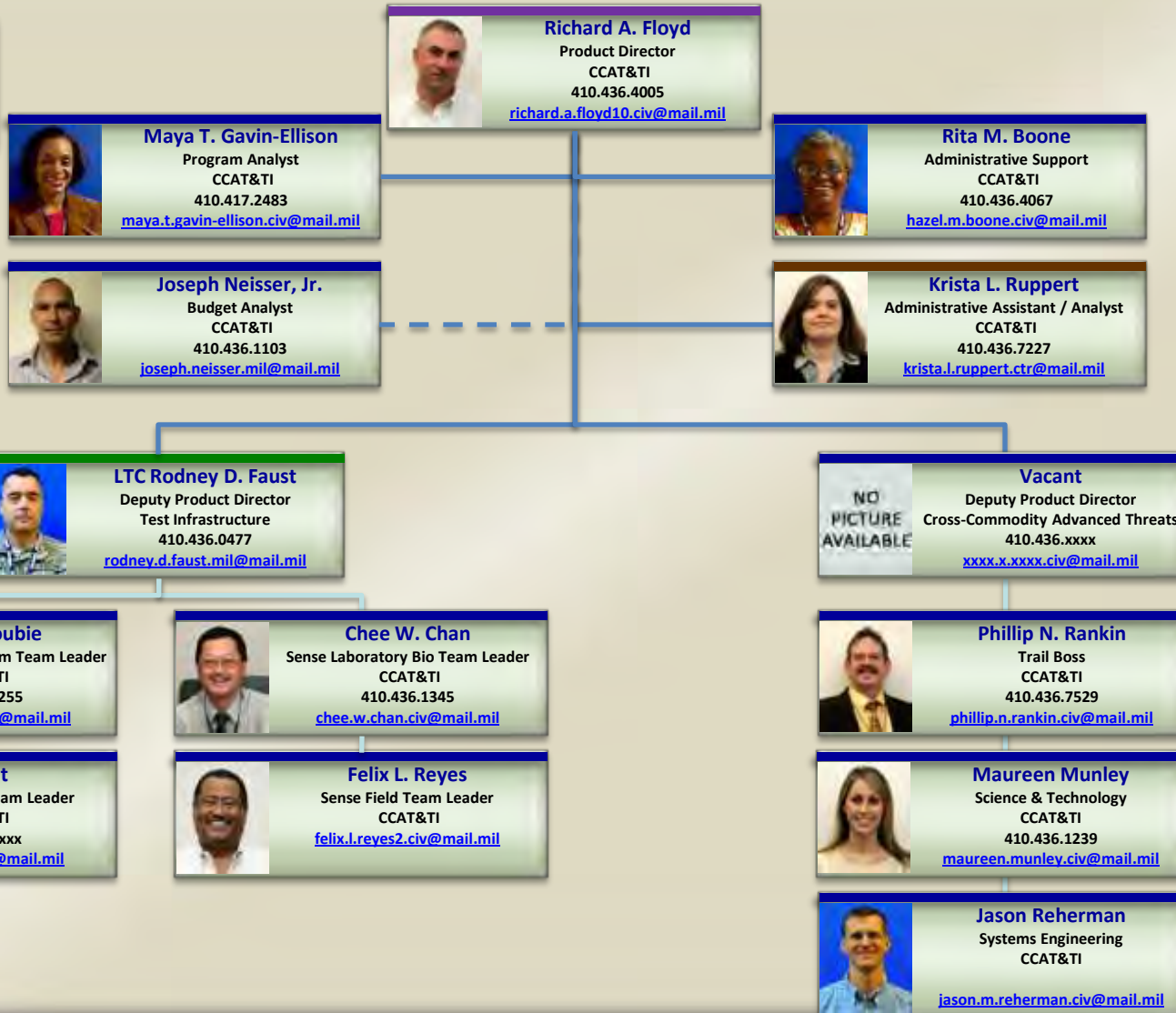
# Test and Evaluation Infrastructure



# Product Director

## Cross-Commodity Advanced Threats & Test Infrastructure

- Military
- Core Civilian
- Matrix Civilian
- Contractor
- Other





# Warfighter Needs



- **Biological Standoff Test Chamber**
- **Chemical Biological Agent Resistance Test (CBART)**



# Biological Standoff Test Chamber

- **Program Overview**

- **Effort Description:**

- Design and fabricate a BSL3 facility to conduct cross section measurements of live agent testing of bio standoff detection systems
    - Capability Located: TBD

- **Schedule: FY12 – FY14**

- **Acquisition Approach: Contract to fabricate and install the system in FY12**

- Request for Proposal: 3QFY12
    - Industry Day: 2QFY12
    - Draft RFP: 2QFY12

- **Program Technical Challenges**

- Develop technology to conduct cross section measurements in a BSL3 environment.

- **Program Acquisition Strategy**

- **Contract Strategy**

- DPG Contracting (Full & open competition)



# Chemical Biological Agent Resistance Test (CBART)

- **Program Overview**

- **Effort Description:**

- Design and Fabricate an Improved Material Swatch Test Fixture for Agent Resistance Testing of Barrier Materials Over a Range of Controlled Environmental Conditions
    - Located at Dugway Proving Ground

- **Schedule: FY13-FY16**

- **Acquisition Approach: Contract**

- Request for Proposal: 1QFY13
    - Industry Day: 2QFY12
    - Draft RFP: 3QFY12



- **Program Technical Challenges**

- Design and Fabrication of a Swatch Test Fixture That Operates Over a Wide Range of Controlled Environmental Conditions.

- **Program Acquisition Strategy**

- **Contract Strategy**

- RDECOM Acquisition Center (Full & Open Competition)



# S&T Schedule



Fiscal Year	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Algorithm Development							
Next-Gen Chem Point							

RDTE

PROC

MS



# Program Schedules



PD/JPM	Program	FY12	FY13	FY14	FY15	FY16	FY17
RPI	NBCRV Stryker						
RPI	JSLSCAD						
RPI	CBMS						
RPI	DR SKO / DR SKO II						
Point	NGCPD						
Point	JCAD						
Point	JCBRAWM Inc 2						
Standoff	SSI						
TESS	TESS						
CAT	NTA Detect						

6.4	6.5	PROC	Sustainment
-----	-----	------	-------------



# S&T Funding (\$M) (FY12 President's Budget)



YEAR/ RTDE	FY12	FY13	FY14	FY15	FY16	TOTAL FY12-16
6.2	24.9	18.8	20.4	19.7	24.7	108.5
6.3	15.3	26.2	21.2	21.2	21.7	105.6
TOTAL BUDGET	40.2	45.0	41.6	40.9	46.4	214.1





# Program Funding (\$M)

YEAR/ RTDE	FY12	FY13 <i>(notional)</i>	FY14 <i>(notional)</i>	FY15 <i>(notional)</i>	FY16 <i>(notional)</i>	FY17 <i>(notional)</i>	TOTAL FY12-17
6.4	5.4	36.5	51.5	57.6	51.5	17.1	219.6
6.5	58.2	37.3	26.3	21.1	34.2	74.4	251.5
Proc	110.3	159.8	68.2	107.2	123.4	118.5	687.4
CLS (OMA)		250-375					
TOTAL BUDGET	173.9	233.6	146.0	185.9	209.1	210.0	1158.5

Funding pending FY12 Appropriations and approval of FY13-FY17 POM



# S&T Business Opportunities



OPPORTUNITY		TIME-FRAME
<b>Algorithm Development (Annual)</b>		
<ul style="list-style-type: none"><li>– NSF BAA <a href="http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503427">http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503427</a></li></ul>		Open now
<b>CB Defense Physical Science and Technology (Bi-annual) BAA</b>		
<ul style="list-style-type: none"><li>– For New Start Projects (FY10-15)</li></ul>		November 2011
<b>CB Defense Small Business Innovation Research (SBIR)</b>		
<ul style="list-style-type: none"><li>– <a href="http://www.acq.osd.mil/sadbu/sbir/homepg.htm">http://www.acq.osd.mil/sadbu/sbir/homepg.htm</a></li></ul>		
<ul style="list-style-type: none"><li>– For New Start Projects (FY10-15)</li></ul>		Mid-Nov 2011



# Program Business Opportunities



OPPORTUNITY	TIME-FRAME
<b>Sensors</b>	
– TRE	FY11/FY12
<b>Biological Standoff Test Chamber</b>	
– RDECOM Acquisition Center (Full and Open Competition)	RFP 3QFY12
<b>Chemical Biological Agent Resistance Test (CBART)</b>	
– RDECOM Acquisition Center (Full and Open Competition)	RFP 1QFY13
<b>Dismounted Reconnaissance – Sets, Kits and Outfits (DR SKO)</b>	
– Tech Refresh Opportunities	FY14
<b>CB Contractor Logistics Support</b>	
– Recompete Opportunity	RFP 2QFY12
<b>Next Generation Chemical Point Detection (NGCPD)</b>	
– RDECOM Acquisition Center (Full and Open Competition)	2QFY13



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# MEDICAL SYSTEMS

September 7, 2011

## Advanced Planning Briefing to Industry



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# Agenda



- Overview
- S&T and Warfighter Needs
- Technical Challenges
- Acquisition Strategy / Funding / Schedule
- Upcoming Business Opportunities
- Contacts





# Warfighter Needs



- **Medical Priorities from the Chemical Biological Defense Program 2011 Joint Priority List (JPL)**
  - FDA Approved
    - Prophylaxis
      - Biological Prophylaxis
      - Chemical Prophylaxis
      - Radiological Prophylaxis
    - Medical Diagnosis
    - Therapeutics
      - Biological Therapeutics
      - Chemical Therapeutics
      - Radiological Therapeutics







# Warfighter Needs



**Warfighter** ➡ **Requirements** ➡ **JRO** ➡ **Requirements Documents** ➡ **S&T** ➡ **JPEO-CBMS**

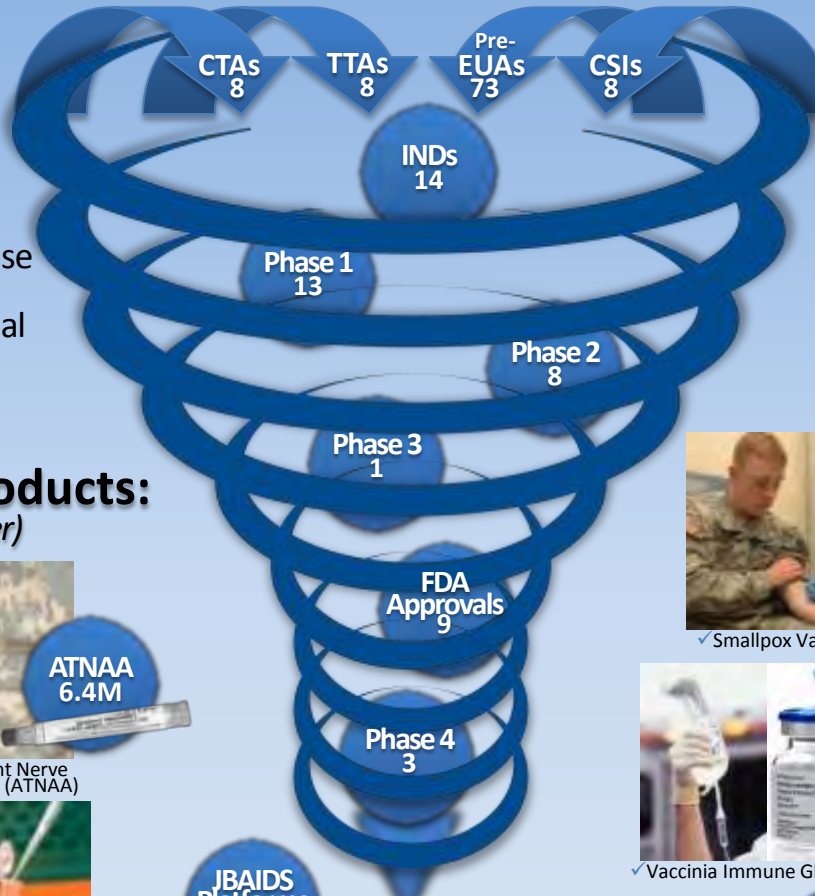


# Medical Capabilities Delivered to the Warfighter



## Partner Inputs:

- ✓ 8 – Capability Transition Agreements (CTAs)
- ✓ 8 – Technology Transition Agreements (TTAs)
- ✓ 73 – Assays for Pre-Emergency Use Authorization (EUAs)
- ✓ 8 – Relevant Congressional Special Interest Projects (CSIs)



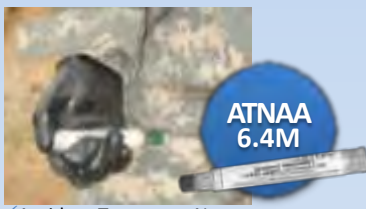
## CBMS Expertise:

- ✓ 14 - Investigational New Drugs (INDs)
- ✓ 13 – Phase 1 Clinical Trials
- ✓ 8 – Phase 2 Clinical Trials
- ✓ 1 – Phase 3 Clinical Trials
- ✓ 3 – Phase 4 Clinical Trials
- ✓ **9 - Food & Drug Administration (FDA) Approvals**

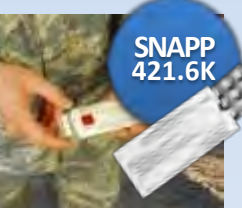
## Results in Fielded Products: (CBMS Lifecycle Manager)



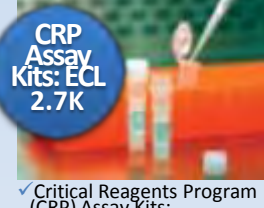
- ✓ Convulsant Antidote for Nerve Agents (CANA)



- ✓ Antidote Treatment Nerve Agent Autoinjector (ATNAA)



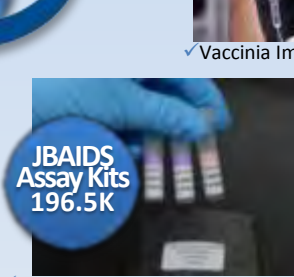
- ✓ Soman Nerve Agent Pretreatment Pyridostigmine (SNAPP)



- ✓ Critical Reagents Program (CRP) Assay Kits: Electrochemiluminescence



- ✓ Joint Biological Agent Identification Diagnostic System (JBAIDS)



- ✓ Joint Biological Agent Identification Diagnostic System (JBAIDS)



- ✓ Smallpox Vaccine (SPX)



- ✓ Vaccinia Immune Globulin (VIG)



- ✓ Anthrax Vaccine Adsorbed (AVA)



- ✓ Critical Reagents Program (CRP) Assay Kits: Lateral Flow Immunoassays (LFI)

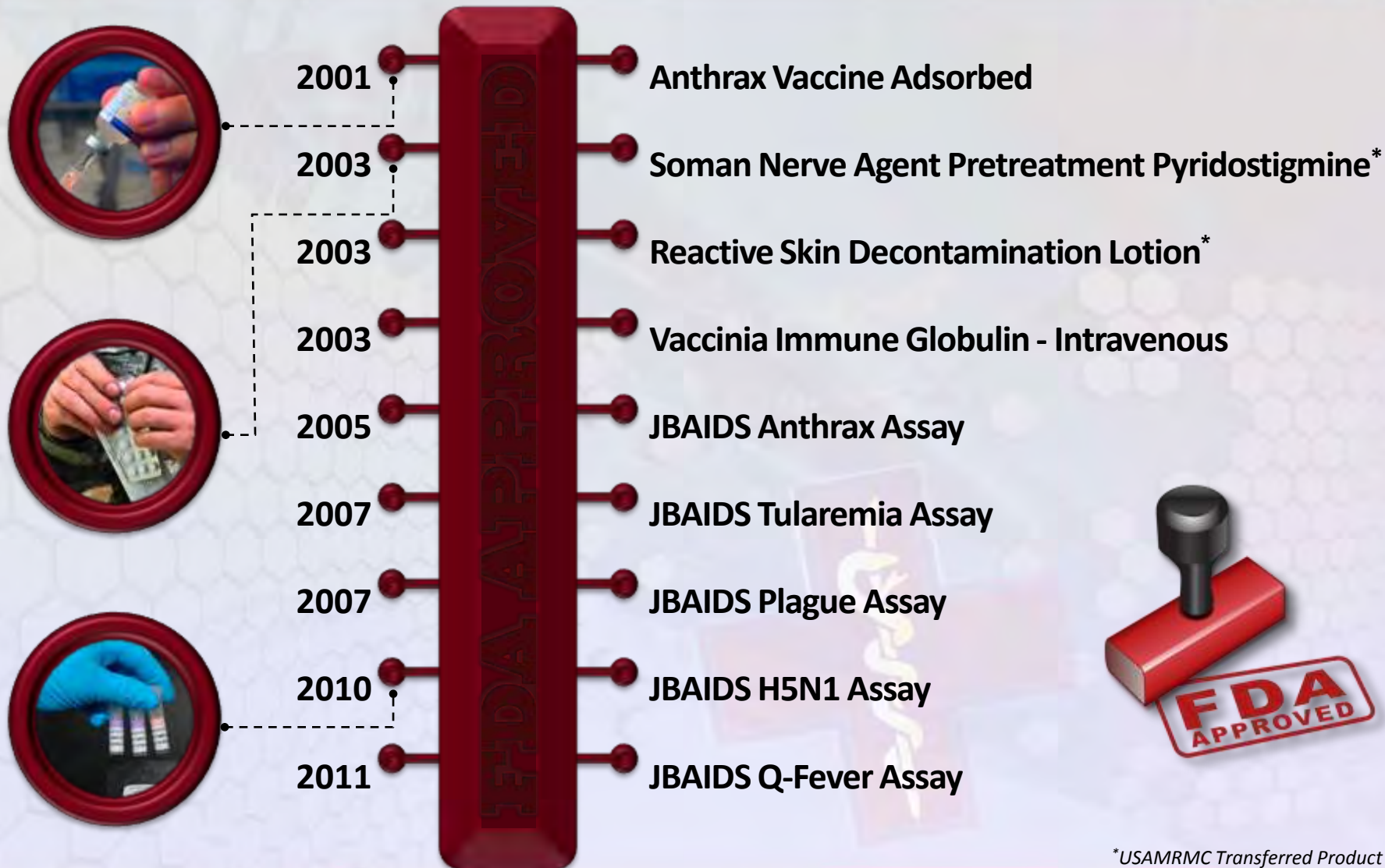


- ✓ Critical Reagents Program (CRP) Assay Kits: Polymerase-Chain Reaction (PCR)





# CBMS Successes



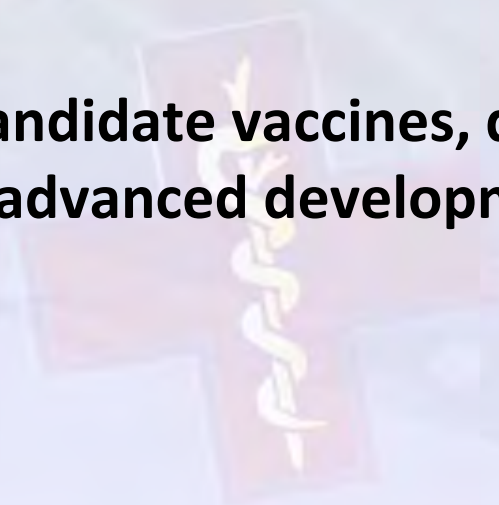
\*USAMRMC Transferred Product



# DTRA-JSTO Science & Technology (S&T) *Overview*



- **Develop candidate pretreatments/prophylaxes and therapeutics for protection against biological and chemical agents and radiological exposure; develop, assess and validate diagnostic assays for chemical and biological agents**
- **Utilize new biotechnologies to develop broad-spectrum countermeasures against conventional, emerging, and engineered biological threats**
- **Transition FDA-approvable candidate vaccines, drugs and diagnostic assays/devices to advanced development**







# DTRA-JSTO Science & Technology (S&T)

## *Needs and Technical Challenges*



- **Pretreatments**

- Novel vaccine platforms (including multi-valent and/or broad spectrum) effective against the bacterial threat agents
- Ability to predict/understand the human immune response to agents and/or vaccine candidates
- Alternate delivery technologies (i.e., to exploit DNA vaccines, needle-free, adjuvanted)
- Thermal stabilization methodologies
- Develop a catalytic or small molecule nerve agent prophylaxis

- **Therapeutics**

- Novel host-directed, broad-spectrum therapeutics
- Small molecule based antimicrobials targeting previously unexploited pathogen pathways
- Small molecule inhibitors of, and host-directed therapeutics effective against toxins
- Innovative therapeutic strategies and drug candidates to ameliorate the acute and long-lasting functional damage resulting from nerve agent intoxication
- Compounds that reactivate OP-inhibited AChE
- Therapeutic strategies that minimize injuries to dermal and ocular tissues resulting from CWAs



# DTRA-JSTO Science & Technology (S&T)

## *Needs and Technical Challenges (cont.)*



- **Diagnostics**

- NGDS that is small, portable and field deployable:
  - Rapid, with improved sensitivity and specificity
  - Multi-plexed & expandable
- Pre-analytical method refinement
- Early host-indicators/biomarkers of exposure/infection
- Ability to identify pathogens that exhibit high genetic plasticity
- Simultaneously identify BW & non-BW pathogens in clinical matrices
- Integration of host response and pathogen-specific analyses on a single platform

- **Medical Radiological Defense**

- Develop effective radioprotectants (pretreatments and therapeutics); repair radiogenic damage to gastrointestinal tract
- Develop biodosimetry for MedRad exposure (deep tissue)
- Animal models that will support the FDA licensure of candidate medical countermeasures using the animal rule
- Multi-use platforms that can be utilized to develop candidate medical countermeasures against new and emerging threats



# Chemical Biological Medical Systems (CBMS)

## Program Overview



*Our Vision is a U.S. military force that is fully sustained to fight and win in any CBRN battlespace worldwide.*



Deliver safe, effective and robust medical products that protect U.S. forces against validated CBRN threats. We apply government and industry best practices to develop or acquire FDA-approved products within rigorously managed cost, schedule and performance constraints.





## CBMS Current Advanced Development Efforts



- **CBMS products are integrated into the DoD “System of Systems” approach by providing the medical materiel solutions required to protect, diagnose and treat Service Members exposed to the effects of CBRN agents**
  - Joint Vaccine Acquisition Program (CBMS-JVAP)
    - Develop, produce, and stockpile FDA-licensed vaccine systems to protect the Warfighter from biological agents
  - Medical Identification & Treatment Systems (CBMS-MITS)
    - Rapidly provide the Warfighter and the Nation robust & affordable FDA-approved lifesaving medical countermeasure drug capabilities against chemical, biological, radiological and nuclear threats
  - Biosurveillance (CBMS-BSV)
    - Develop and integrate chemical, biological, radiological, and nuclear (CBRN) technologies to enable early warning, identification, and continued situational awareness of potential global health threats



# CBMS Current Advanced Development Efforts (cont.)

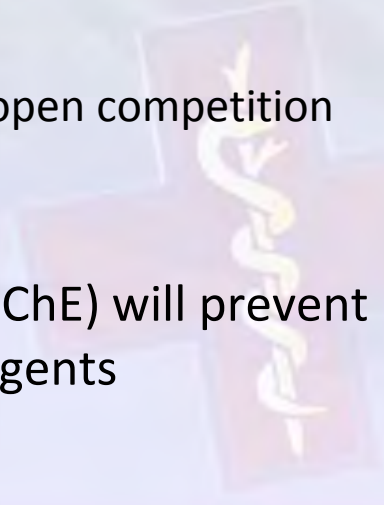


- **Biological Prophylaxis**

- CBMS-JVAP partners with DynPort Vaccine Company (DVC) using the prime systems contractor approach to meet current DoD biological defense vaccine requirements for vaccines currently in development
  - DVC obtains and maintains FDA licenses
  - Recombinant Botulinum Toxin A/B Vaccine Program (rBV A/B)
  - Recombinant Plague Vaccine
- Transitioned new Filovirus Vaccine program to advanced development in 2010
  - Acquisition will be via full and open competition

- **Chemical Prophylaxis**

- Bioscavenger (human-derived BChE) will prevent incapacitation and death from exposure to nerve agents





# CBMS Current Advanced Development Efforts (cont.)



- **Medical Diagnostics**

- Joint Biological Agent Identification and Diagnostic System (JBAIDS) will provide portable diagnostic capability to warfighter. Evolutionary approach:
  - JBAIDS Increment I
    - System capable of identifying 10 Biological Warfare Agents (BWAs)
- Next Generation Diagnostic System is an evolutionary acquisition program that will provide increments of capability across the Combat Health Support, environmental surveillance and the CBRN Defense architecture
  - Platform components; FDA clearance for diagnostic components
  - Low complexity, low-resource components
  - Enabling components (screening, collection and preservation tools)
  - Range of threats include endemic, emerging and re-emerging Infectious Diseases (ID) of military importance and traditional and bio-engineered Biological Warfare Agents (BWA)
- Critical Reagents Program (CRP) provides biological threat agent and genomic reference material as well as assays for fielded systems
  - Over 200 strains in inventory





# CBMS Current Advanced Development Efforts (cont.)

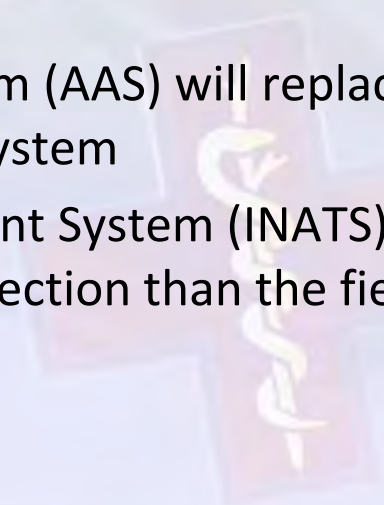


- **Radiological Therapeutics**

- Medical Radiation Countermeasure (MRADC)
  - Several countermeasures will be required to treat the spectrum of acute radiation syndrome (ARS) injuries
  - DoD currently pursuing a gastrointestinal-ARS capability and will leverage HHS efforts on both GI- and hematopoietic sub-syndrome of ARS to fully meet broad spectrum protection

- **Chemical Therapeutics**

- Advanced Anticonvulsant System (AAS) will replace Convulsant Antidote Nerve Agent (CANA) system
- Improved Nerve Agent Treatment System (INATS) active ingredient will replace and provide better protection than the fielded oxime, 2-PAM





# CBMS Technical Challenges



- **Leverage emerging technology to accelerate development**
- **Evolving FDA Guidance**
  - Animal Rule
  - Large scale manufacturing process validation
- **Industrial base/infrastructure sustainment**
- **Biosurety requirements for BSL 3/4 commercial facilities**
- **Product specifications must be fully compatible with medical logistics/sustainment needs of diverse military operations**
- **Enhance product thermostability/increased drug formulation stability**
- **Develop alternate delivery platforms to reduce number of injections**



## **S&T and CBMS Warfighter** *Capability Strategy*



- **Place greater emphasis on developing broad-spectrum medical countermeasures**
- **Exploit cutting edge technologies to improve medical countermeasures**
- **Accelerate development cycle (rapid vaccine and drug development)**
- **Leverage existing capabilities found in other federal agencies, industry, and international partners**
- **Sustain long-term investment in developing candidates for capability gaps**
- **Ensure knowledge base to support future technology development**



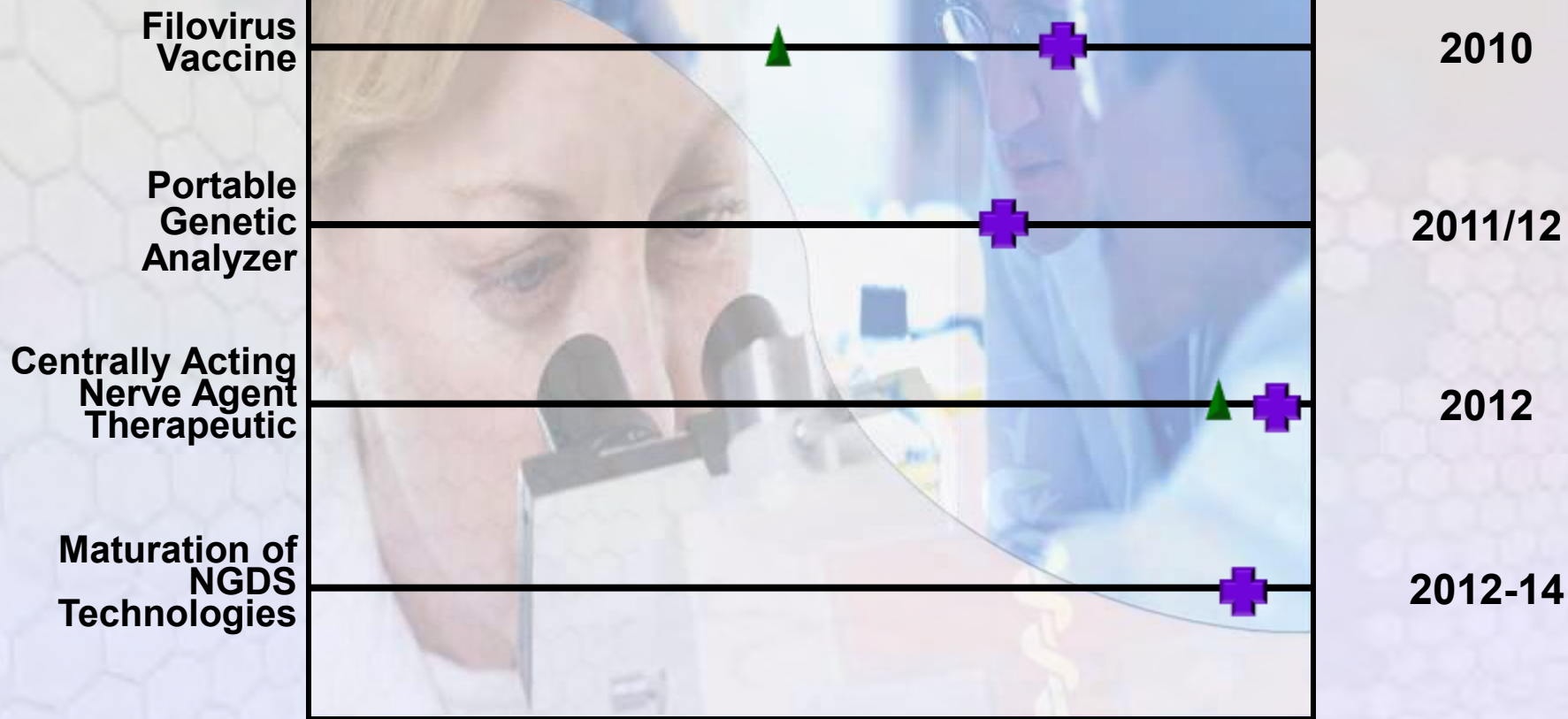


# DTRA-JSTO Science & Technology (S&T) Program Schedule/Transition to CBMS



**FY04** **FY05** **FY06** **FY07** **FY08** **FY09** **FY10** **FY11** **FY12**  
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

**Proposed  
Transition**






**LEGEND:** ▲ Technology Transition Agreement (TTA) ✚ Transition Opportunity



# CBMS Portfolio



		MS A MS B MS C (LRIP) MS C (FRP) IOC FOC											
JPMs	CAPABILITY	PRODUCT	MDD	IND	PHASE 1	PHASE 2	PHASE 3	BLA/NDAs	APPROVAL	PROC	SUSTAIN	NEXT MS	LICENSURE
	Prophylaxis Vaccines	Filovirus Vaccine										MS B 2015	TBD
		Recombinant Botulinum A/B Vaccine										MS C 2013	2016
		Plague Vaccine										MS C 2013	2016
		Anthrax Vaccine Adsorbed										★	SNS
		Smallpox Vaccine										★	SNS
		Vaccinia Immune Globulin										★	Cangene
JPM	CAPABILITY	PRODUCT		IND	P1	P2	P3	B/N	A	PROC	SUST	NEXT MS	LICENSURE
	Pretreatment/Treatment Drugs	Advanced Anticonvulsant System										MS C 2013	2012
		Bioscavenger										MS B 2012	2019
		Centrally Acting Nerve Agent Treatment System										MS A 2012	2020
		Improvement Nerve Agent Treatment System										MS B 2013	2017
		Inhalation Atropine										TBD	TBD
		Medical Radiation Countermeasures										MS B 2013	2016

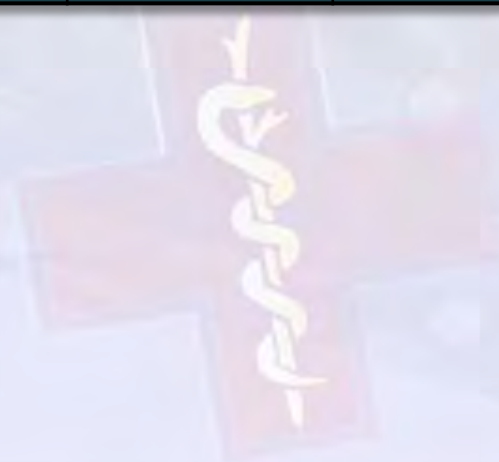
		MS A   MS B   MS C (LRIP)   MS C (FRP)   IOC FOC												
JPMs	CAPABILITY	PRODUCT	MDD	DEVELOPMENT	PRE-CLINICAL	ANALYTICAL	CLINICAL	510(k)	REVIEW	PROC	SUSTAIN	NEXT MS	FIELD/ LICENSURE	
	Devices Diagnostics & Reagents	Next Generation Diagnostic System— Increment 1										MS A 2012	TBD	
		Next Generation Diagnostic System— Increment 2											MS A 2013	TBD
		◆ Joint Biological Agent Identification & Diagnostic System											★	Services
		◆ Diagnostic Kit: Expanded Influenza Panel											510(k)	2011
		◆ Diagnostic Kit: Glanders											510(k)	2014
		◆ Diagnostic Kit: Typhus											510(k)	2013
		◆ 510(k) Amendments: Anthrax, Plague & Tularemia											510(k)	2013
	◆ Diagnostic Kits: Anthrax, Tularemia, Plague, Avian Influenza (Flu A/H5), Q-Fever											★	Services	



# DTRA-JSTO Science & Technology (S&T) Funding



\$M	FY12	FY13	FY14	FY15	TOTAL
6.2 Research (Medical Core, CBM)	75.5	77.7	78.8	80.1	312.1
6.3 Research(Medical Core, CBM)	74.7	69.9	72.5	73.6	290.7
<b>TOTAL</b>	<b>150.2</b>	<b>147.6</b>	<b>151.3</b>	<b>153.7</b>	<b>602.8</b>







# CBMS FY11-17 Presidents Budget (FY12) *Funding\**



\$K	FY11	FY12	FY13	FY14	FY15	FY16	FY17	TOTAL
CBMS								
BA4/5/7	\$ 145,649	\$ 181,222	\$ 174,922	\$ 209,085	\$ 116,040	\$ 92,431	\$ 52,767	\$ 972,116
PROC	\$ 19,389	\$ 1,001	\$ 36,326	\$ 28,106	\$ 29,597	\$ 26,790	\$ 49,738	\$ 190,947
Total	\$ 165,038	\$ 182,223	\$ 211,248	\$ 237,191	\$ 145,637	\$ 119,221	\$ 102,505	\$ 1,163,063

**BA4 = Pre-Milestone B**

**BA5 = Post-Milestone B**

*\*Data derived from FY12 BES (Presidents Budget) scenario.*



# DTRA-JSTO S&T Upcoming Business Opportunities



Program	Estimated Target BAA Release	Target Funding Year
<b>DTRA Chemical &amp; Biological Technologies Directorate FY12-13 2-yr Broad Agency Announcement (BAA)</b> <ul style="list-style-type: none"> <li>• Extramural (non-US Government) only, leading to contract &amp; grant awards</li> <li>• Additional topics may be added in the future; continue to monitor</li> </ul>	<b>FY12-13 Solicitation Open Now!</b>	<b>FY12/13</b>
<b>Small Business Innovation Research (SBIR) program</b> <ul style="list-style-type: none"> <li>• Opportunity for Small Business engagement in S&amp;T program</li> <li>• Lead to contract and grant awards</li> </ul> <a href="http://www.dodsbir.net/solicitation/default.htm">http://www.dodsbir.net/solicitation/default.htm</a>	<b>November 2010</b>	<b>FY11</b>
<b>Directed Research in DTRA CB Directorate</b>	<b>As Needed</b>	<b>Ongoing</b>
<b>DTRA R&amp;D Innovation Office – Science and Technology New Initiatives BAA (HDTRA1-07-RDINO-BAA)</b>	<b>Open Now</b>	<b>Ongoing</b>
<b>DTRA Fundamental Research to Counter Weapons of Mass Destruction BAA (HDTRA1-09-14-FRCWMD-BAA)</b>	<b>Fall 2010</b>	<b>Ongoing</b>

Relevant Websites: <http://www.dtra.mil>, <http://www.fbo.gov>, <http://www.grants.gov>



# CBMS Program Upcoming Business Opportunities



Program	Description	Year
<b><i>CBMS - Broad Agency Announcement</i></b>		
<b>Broad Agency Announcement: Chemical Biological Medical Radiological and Nuclear Countermeasure Research &amp; Development (CBMS BAA)</b>	<a href="http://www.smdc.army.mil/2008/CAMO-BAA.asp">http://www.smdc.army.mil/2008/CAMO-BAA.asp</a>	<b>Ongoing</b>
<b><i>Dynport Vaccine Company</i></b>		
<b>Botulinum Vaccine Program</b>	Conduct Phase 3 clinical trial. Anticipated RFP release through DVC 3QFY11. <a href="http://www.csc.com/dvc">http://www.csc.com/dvc</a>	<b>FY11-14</b>
<b>Plague Vaccine Program</b>	Conduct Phase 3 clinical trial. Anticipated RFP release through DVC 2QFY11. <a href="http://www.csc.com/dvc">http://www.csc.com/dvc</a>	<b>FY11-14</b>
<b><i>Request For Proposal</i></b>		
<b>Filovirus Vaccine Program</b>	Process development, manufacturing, and Phase 1 clinical testing for filovirus vaccine (multiple RFPs anticipated) <a href="http://www.fbo.gov">http://www.fbo.gov</a>	<b>FY10-15</b>





# CBMS Program Upcoming Business Opportunities (cont.)



Program	Description	Year
<i>Request for Proposal</i>		
<b>Centrally Acting Nerve Agent Treatment System (CANATS)</b>	CANATS encompasses the addition of centrally-acting therapeutics to the current or future nerve agent antidote treatment regimens to improve the efficacy of these countermeasures against traditional nerve agents and NTAs. RFI release 2QFY12 and RFP anticipated 1QFY13 for candidate development through Food and Drug Administration approval. <a href="http://www.fbo.gov">http://www.fbo.gov</a>	<b>FY13-20</b>
<b>Improved Nerve Agent Treatment Systems (INATS)</b>	Advanced development of an improved oxime and additional indications for pyridostigmine bromide to support use against traditional nerve agents and NTAs. Anticipated RFI release date 2QFY12; RFP release late FY12. <a href="http://www.fbo.gov">www.fbo.gov</a>	<b>FY12-FY17</b>
<b>Bioscavenger</b>	Advanced development of plasma butyrylcholinesterase as a nerve agent prophylactic to include manufacturing, clinical and non-clinical trials. Anticipated draft RFP for Industry comment early 1QFY12 and RFP release 2QFY12. <a href="http://www.fbo.gov">www.fbo.gov</a>	<b>FY12-FY19</b>
<b>Next Generation Diagnostic System (NGDS)</b>	COTS procurement of Increment I of Next Generation Diagnostic System. Anticipated RFP release FY12. <a href="http://www.fbo.gov">www.fbo.gov</a>	<b>FY12-FY16</b>



# Points of Contact



- **Chief, Medical S&T, Chemical & Biological Technologies Directorate, Defense Threat Reduction Agency (DTRA)**
  - Dr. Paula Bryant
  - (703) 767-3405
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- **Joint Project Manager, Chemical Biological Medical Systems (CBMS)**
  - COL Charles B. Millard
  - 301-619-7400
  - charles.b.millard@us.army.mil
- **Deputy Joint Project Manager, Chemical Biological Medical Systems (CBMS)**
  - Dr. Ed Clayson
  - 301-619-7400
  - edward.clayson@amedd.army.mil
- **Dynport Vaccine Company (DVC) Point Of Contact**
  - Mr. Steven Griffith
  - 301-607-5016

*CBMS Medical CBRN Broad Agency Announcement:*

<http://www.smdc.army.mil/2008/CAMO-BAA.asp>

*Defense Acquisition University:* <http://www.dau.mil>



UNCLASSIFIED



# APBI Conference

*Joint Program Executive Office for Chemical and Biological Defense*

**Jess A. Scarbrough**  
**Brigadier General, USA**  
**Joint Program Executive Officer**  
**for Chemical and Biological Defense**  
**703.681.9600**

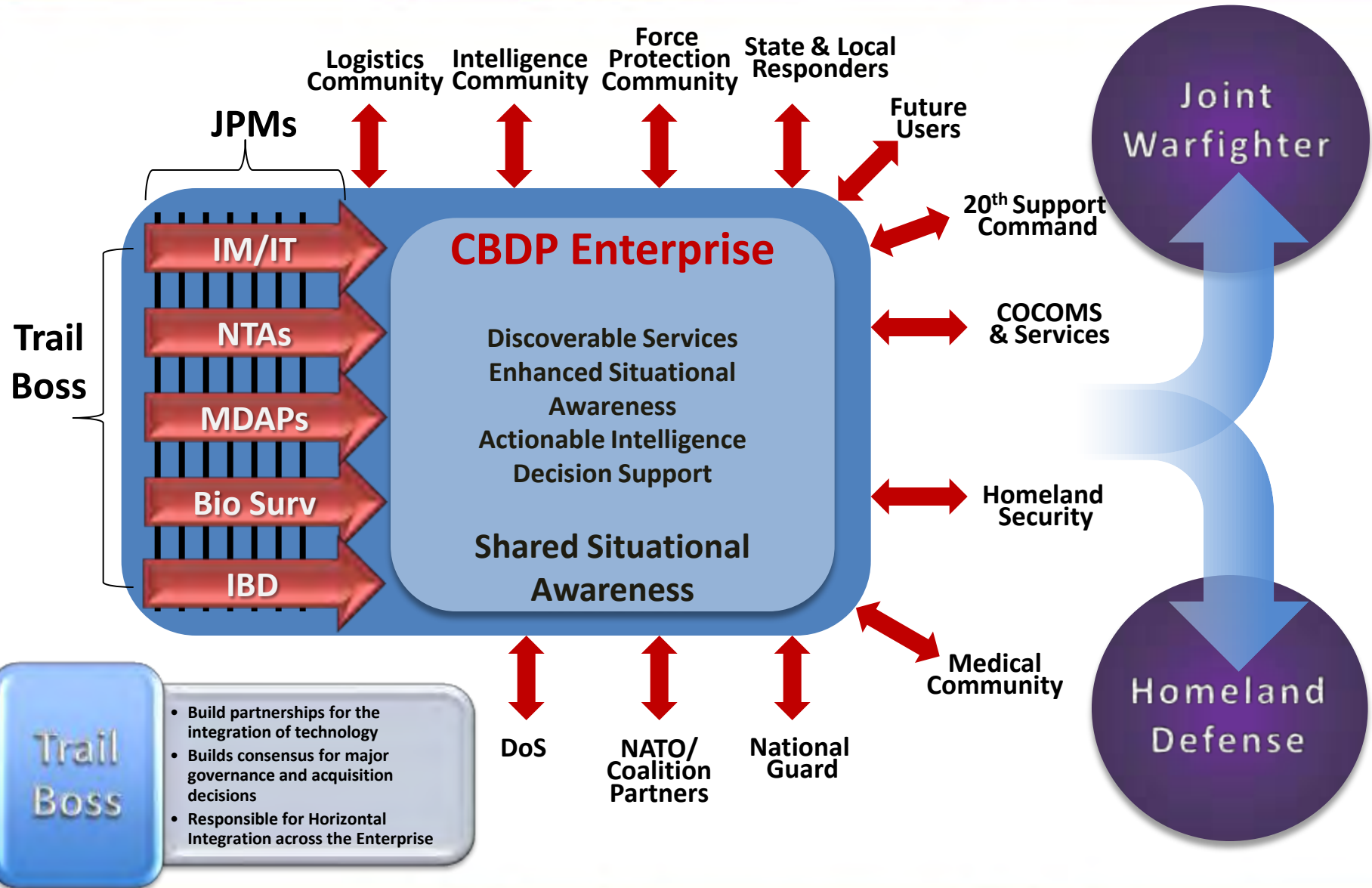
**September 8, 2011**





# Trail Boss

## CBDP Enterprise Management



*The BEST Technology and Equipment  
At the RIGHT PLACE  
At the RIGHT TIME  
At the RIGHT COST*

**BG Jess A. Scarbrough**

<http://www.jpeocbd.osa.mil>

**JPEO-CBD**

Joint Program Executive Office for  
Chemical & Biological Defense  
(703) 681-9600





# INFORMATION SYSTEMS

**September 7, 2011**

## Advanced Planning Briefing to Industry

**MR. SCOTT WHITE**  
**JPM INFORMATION SYSTEMS**  
**Joint Program Executive Office**  
**for Chemical and Biological Defense**  
*scott.white@jpmis.mil*

**MR. CHUCK FROMER**  
**Deputy Division Chief**  
**Joint Science and Technology Office**  
**for Chemical and Biological Defense**  
*charles.fromer@dtra.mil*



# Outline

- **Program Overview**
- **Information and Analysis S&T and Warfighter Needs**
- **Technical Challenges**
- **Acquisition Strategy / Funding / Schedule**
- **Upcoming Business Opportunities**
- **Contacts**





## S&T Overview: DTRA RD-CB / CBDB JSTO Information & Analysis Division

- **Mission:** Provide and use information and analysis capabilities to enable and support operational & programmatic decision-making.
- **Portfolio Areas:**
  - **Hazard Prediction & Mitigation:** *The “What?” and “What Do I Do Now?”*
    - Enable prediction of initial hazards, exposures, casualties, and infections
    - Enable timely and accurate warnings and recommended actions
  - **Operational Effects & Mitigation:** *The “So What?” & “What Can I Do to Fix it?”*
    - Enable Assessment & Mitigation of Impacts at the Person, System, Tactical, Operational, and Strategic Levels
  - **Data:** *The “What Data Tells Us That?”*
    - Enable Discovery, Access, & Usability of CBRN Data Per DoD Data Policies
- **User focus:** *CBRN Defense, C-WMD Operations, & WMD Analysis*
  - DoD Core Super-Users: DTRA RD-IS, IDA, AFRL, ECBC, & NSWC
  - DoD General-Users Conducting Military & Civil Support Operations
  - Non-DoD: DHS & UK as Super-Users; Other Allies as General-Users



# FITS and SEEDS

## Focused Innovative Technology (FIT) Programs

- \$3-\$10M / yearly, over a 3-5 year duration
- Pursue a significant new capability or area of knowledge
- Team approach in complementary areas (Multidisciplinary)

## Strategic Exploratory and Emerging Discoveries (SEEDs)

- \$50-\$500K 1 year
- „Expbre“ concepts for new programs



“Fruits” of the process are the new capabilities or technologies

SEED

SEED

SEED

SEED

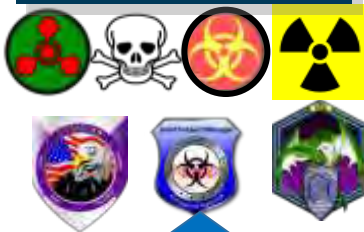


# End-to-End CBRN Capabilities

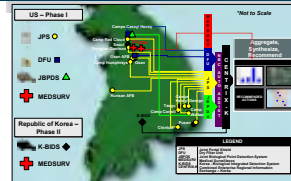
*Providing CBRN data and services to stakeholders across all levels of command, optimizing decision support, and shared situational awareness across DoD and HD.*



Sensors and Systems



Warning, Reporting, and Dissemination of CBRN Information



Hazard Analysis and Predictions



Decision Support/Incident Management



Enterprise Standards, Protocols, Information Assurance, Architecture

***Enterprise solutions supporting collection, analysis, and dissemination of actionable CBRN information.***



# JSTO Near Term (FY12-FY13) Plans

## Hazard Prediction & Mitigation

- Rapid Source Term Estimation
- Validated Source Determination and Hazard Refinement
- Initial High Altitude Modeling
- Waterborne T&D
- Interior modeling
- JEM S&T Prototype
- Urban Dispersion
- Missile Intercept
- Improved Atmospheric Boundary Layer Modeling
- Updated Land-use and Climatology
- DTRA Integrated WMD Tool Set (IWMDT) Program
- DTRA Reachback Program

## Operational Effects & Mitigation

- Expanded agents for contagious disease and NTA modeling
- Leverage Military Protective Action Distances (MPAD) and advances in JCID-on-a-Chip development/integration
- Operations & Planning Needs (CBOSS Reconstituted = Gen-1)
- Analysis Support Program

## Data

- System Performance Needs (e.g., Gen-1 T&E Simulations)
- Chemical Biological Warfare Agent Effects Manual Number 1 (CB-1 Gen-1)
- Analysis Support Program



# JSTO Mid Term (FY14-15) Plans

## Hazard Prediction & Mitigation

- Initial Release Source
- Source Term Models (NTA Source, Missile Intercept)
- Atmospheric Transport & Dispersion
- Urban Dispersion
- Waterborne Transport & Dispersion
- Agent Fate of CWAs and NTAs, Atmospheric Chemistry
- DTRA Integrated WMD Tool Set (IWMDT) Program
- DTRA Reachback Program

## Operational Effects & Mitigation

- Material Behavior
- Demonstrate that JCID-on-a-Chip can be embedded in TAC-BIO and used to make a detection, can be successfully integrated with the Joint Tactical Radio System (JTRS), and can be used to communicate with JWARN to provide warning downwind of the hazard
- Operations & Planning Needs (CBOSS Gen-2)
- Analysis Support Program

## Data

- System Performance Needs (e.g., Gen-2 T&E Simulations)
- Chemical Biological Warfare Agent Effects Manual Number 1 (CB-1 Gen-2)
- Analysis Support Program





# JSTO Far Term (FY16+) Plans

## Hazard Prediction & Mitigation

- DTRA Integrated WMD Tool Set (IWMDT) Program
- DTRA Reachback Program

## Operational Effects & Mitigation

- Analysis Support Program

## Data

- Analysis Support Program

## Cross-Portfolio Area Plans

JEM & JWARN - Spiral Development of S&T as Advancements in Data, Modeling, Simulation, and Technology Become Available



# JWARN Warfighter Needs

- **Collect, generate, edit, and disseminate NBC reports and plots and provide a means of ensuring all addressees have received a sent message**
- **Application support for GCCS-J/A/M/AF, JTCW/C2PC**
- **Allow NBC Reports (NBC-1/NBC-4) to be formatted and transmitted within 2 minutes, and allow operator selection of automatic, delayed, or on-command sending of NBC reports**
- **Provide C2 interface with both legacy and developmental sensors**



# JEM Warfighter Needs

- **A single, accredited source for CBRN Hazard Modeling**
- **Model Urban Effects**
- **Model in Coastal & Littoral Environments**
- **Source Term Estimation**
- **Model High Altitude Missile Intercept Effects**
- **Improve accuracy of Nuclear Detonation models**
- **Improve Transport and Dispersion Methodologies**
- **Model Waterborne Hazards**
- **Model Contagious Diseases**
- **Model Complex Structures and Building Interiors**
- **Model Human Performance Degradation**
- **Interior Modeling**



# Information and Analysis S&T Challenges

<i><b>Challenge</b></i>	<i><b>Focus</b></i>
<b>CBRN hazards on complex environments and scenarios</b>	<b>JEM</b>
<b>Rapid assimilation and processing of CBRN-related data to support advanced tactical and T&amp;E applications</b>	<b>JWARN, T&amp;E, Other types of analysis</b>
<b>Developing engineering level models of CBRN defense equipment and major DoD systems in CBRN hazard environments</b>	<b>T&amp;E and other types of analysis</b>
<b>Building a CBRN relevant data architecture to support M&amp;S, analysis, and IT development that facilitates decision superiority</b>	<b>ALL</b>
<b>Integrating CBRN-related IT with other emerging technology initiatives</b>	
<b>Operational effects methodologies</b>	<b>Operational Effects Requirements</b>



# Program Technical Challenges

## JWARN

- **Integration of multiple Chemical and Biological Sensor interfaces (Legacy and Developmental)**
- **Compatibility with multiple Service-specific implementations of C2 systems**
- **Evolving C2 system architecture(s)**
- **Web Enablement**
- **Integration with Major Defense Acquisition Programs (MDAPs)**
- **Wireless connectivity incorporating Information Assurance (IA) Requirements**
- **Bi-Directional Cross Domain Solution (CDS)**
- **Coordination with sensor community on best methods of implementing CCSI**
- **Coordination with sensor community on utilizing JoaC capabilities (embedded or external) to support data transmission to network and supporting Service CONOPS**





# Program Technical Challenges

## JEM

- **Incorporation of S&T to meet Inc. 2 requirements and facilitate rapid transition of S&T modeling components**
  - Use of Common CBRN Model Interface (CCMI)
- **Clustering configurations using JEM Web Service on various Joint and Service C4I systems**
- **Use on various Operating Systems (XP, Vista, Win7)**
- **Integration with Joint and Service-specific needs**
  - Weather Interfaces (MDS, JWIS, IMETS, AFWA, METGM, GRIB)
  - Mapping Tools (JMTK, C/JMTK, Falcon View, ARCIMS, Google Maps, Google Earth, NASA World Wind)
  - Hardware Configurations (Networks and CPU Power)



# Program Technical Challenges

## Software Support Activity (SSA)

- **Net-Centric Policy Implementation**
  - Transition to programs composed of modular web services
  - Implementation of CBRN Data Model
  - Continued implementation of CCSI
- **Support Interface/Interoperability Standards**
  - Harmonize CBRN Data Model with other communities
  - Harmonize CCSI with other communities
  - Propose other standards for CBRN based on community needs
- **Management Of Enterprise Common Components**
  - Approve and manage proposed common components
  - Support reuse of common components as “building blocks” for future capability
- **Information Assurance In SOA Environments**



# Information and Analysis S&T Capability Development Strategy

- **Adapt S&T development strategy to new JSTO FIT/SEED paradigm**
- **Balance Between Requirements Pull:**
  - **Align with the Joint Requirements Office (JRO) to address Capability Needs**
  - **Align with Joint Program Executive Office (JPEO) Programs to address Technology Gaps**
  - **Answer critical science questions that support policy, doctrine and requirements decisions**
- **... and Technology Push:**
  - **Centralize investment in Applied Research (6.2 & 6.3)**
  - **Identify and exploit technology opportunities**
  - **Identify and respond to new and emerging threats**
  - **Transition new and innovative technologies with JPEO**
  - **Maintain a robust technology base: knowledge, research capabilities, and T&E methodologies**



# Program Acquisition Strategy

## JWARN

- **2 Increments of development followed by Pre-Planned Product Improvement (P3I)**
- **Increment 1 (FY06 – Present)**
  - Late addition of requirements forced continuation of development
    - Milestone C / Low Rate Initial Production – MAY 2008
    - Multi-Service Operational Test & Evaluation (S/W) – AUG 2008
    - Operational Demonstration (S/W) – OCT 2009
    - Full Deployment Decision (S/W) – SEP 2010
    - Modernization efforts supporting migration to web services supporting US Army C2 Architecture (S/W) – AUG/SEP 2011
- **Increment 2 (FY12 – FY16)**
  - Evolve JWARN Architecture into Web Services (SOA) to accommodate evolving Service C2 strategies and decrease dependence on their architecture
  - Sensor data fusion to support source term estimation
  - Optimal Sensor Placement
  - False Alarm Reduction
  - Interoperability with Medical Surveillance Systems
  - Emerging and original Increment 2 requirements based on ORD
  - AoA will assess evolving Service needs and determine final capability requirements for JCID capabilities



# Program Acquisition Strategy

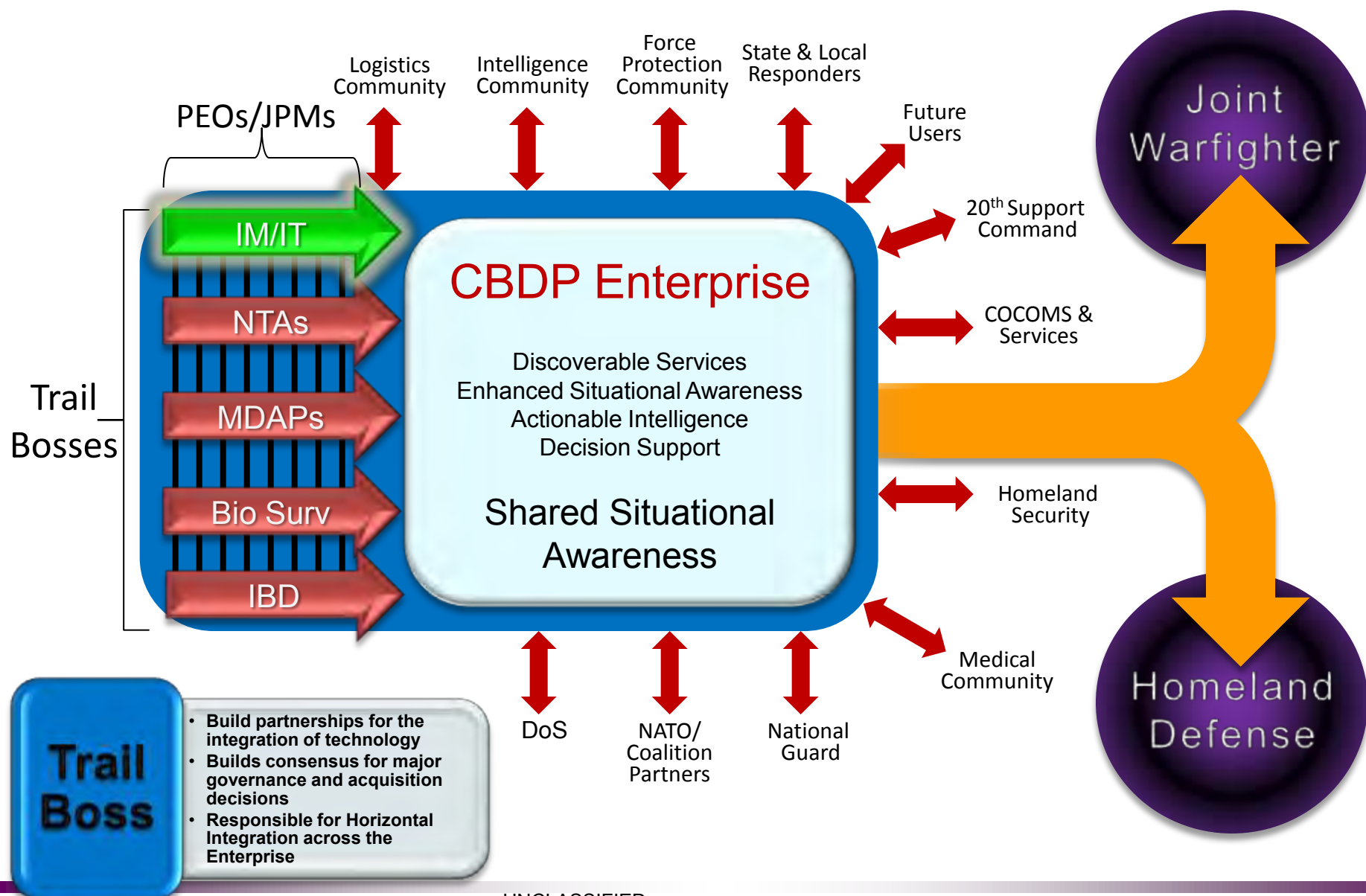
## JEM

- **Increment 1 (present-FY15)**
  - Maintain JEM Baseline for various C4I systems (Updates/IA/Security)
- **Increment 2 (FY10-FY16)**
  - MDD: 4QFY09
  - AoA (limited): 1QFY11
  - MS A: 2QFY11
  - AoA (update): 3Q-4QFY11
  - Multiple sources for required technologies (Government, industry, international)
  - Collaboration with the JSTO
    - JEM Increment 2 integration (single JEM POR and S&T integrator)
    - Common CBRN Modeling Interface (CCMI) implementation
    - CCMI compliant JEM Science & Technology Prototype (JSTP)
  - Software development and system integration contracts





# JPEO-CBD Enterprise Management





# Information Systems S&T Funding

<b>\$(K)</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15</b>	<b>FY16</b>	<b>TOTAL</b>
<b>6.2</b>	<b>22,481</b>	<b>24,332</b>	<b>19,753</b>	<b>16,830</b>	<b>21,789</b>	<b>126,974</b>
<b>6.3</b>	<b>9,632</b>	<b>12,184</b>	<b>10,437</b>	<b>10,877</b>	<b>8,908</b>	<b>60,946</b>
<b>TOTAL</b>	<b>32,113</b>	<b>36,516</b>	<b>30,190</b>	<b>27,707</b>	<b>30,697</b>	<b>187,920</b>



# Upcoming Business Opportunities - S&T

<b><u>Solicitation/Opportunity</u></b>	<b><u>Time Period</u></b>
<b>Focused Innovative Technologies (FITs) and Strategic Exploratory and Emerging Discoveries (SEED) investments</b> <b>FIT: Focused investments into critical mass programs (\$MM/3-7Yrs)</b> <b>SEED: Used to prime FIT programs and create core knowledge foundation (\$100K-500K)</b>	<b>OPEN</b>
<b>Small Business Innovation Research (SBIR) program</b> Opportunity for Small Business engagement in S&T program Lead to contract and grant awards • <a href="http://www.dodsbir.net/solicitation/default.htm">http://www.dodsbir.net/solicitation/default.htm</a>	<b>November 2011</b>
<b>Directed Research in DTRA CB Directorate</b>	<b>As Needed</b>
<b>DTRA R&amp;D Innovation Office – Science and Technology New Initiatives BAA (HDTRA1-07-RDINO-BAA)</b>	<b>OPEN</b>
<b>DTRA Fundamental Research to Counter Weapons of Mass Destruction BAA (HDTRA1-09-14-FRCWMD-BAA)</b>	<b>OPEN</b>

**Relevant Websites:** <http://www.dtra.mil> ; <http://www.fbo.gov>; <http://www.grants.gov>



# Information and Analysis (CBI) S&T Points of Contact

- **Mr. Jerry Glasow, Division Chief, DTRA CBI**  
[jerry.glasow@dtra.mil](mailto:jerry.glasow@dtra.mil)
- **Mr. Charles Fromer, Deputy Division Chief, DTRA CBI**  
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- **Science & Technology Managers**
  - **Mr. Rick Fry, DTRA CBI, Hazard Prediction Information & Analysis**  
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  - **Dr. Chris Kiley, DTRA CBI, Operations Planning Information & Analysis**  
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  - **Mr. Eric Lowenstein, DTRA CBI, System Performance Information & Analysis**  
[eric.lowenstein@dtra.mil](mailto:eric.lowenstein@dtra.mil)



# JPM IS Program Funding

<b>\$(K)</b>	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15</b>	<b>FY16</b>	<b>FY17</b>	<b>TOTAL</b>
<b>RDT&amp;E</b>	<b>26,886</b>	<b>16,754</b>	<b>31,237</b>	<b>38,030</b>	<b>31,745</b>	<b>18,520</b>	<b>18,521</b>	<b>181,693</b>
<b>PROC</b>	<b>10,385</b>	<b>3,880</b>	<b>2,613</b>	<b>1,548</b>	<b>6,607</b>	<b>7,319</b>	<b>8,018</b>	<b>40,370</b>
<b>TOTAL</b>	<b>37,271</b>	<b>20,634</b>	<b>33,850</b>	<b>39,578</b>	<b>38,352</b>	<b>25,839</b>	<b>26,539</b>	<b>222,063</b>





# Upcoming Business Opportunities – JPM IS

<b><u>Solicitation/Opportunity</u></b>	<b><u>Time Period</u></b>
<b>JPM IS SSA</b> <ul style="list-style-type: none"> <li>• Seaport Support IDIQ Multiple Award Contract</li> </ul>	<b>FY11 and Beyond</b>
<b>JWARN Increment 1 – Software update, modernization and maintenance</b> <ul style="list-style-type: none"> <li>• SPAWAR HQ Seaport -E</li> </ul>	<b>FY13 and Beyond</b> <ul style="list-style-type: none"> <li>• RFP 1QFY13</li> </ul>
<b>JWARN Increment 2 -Development, Integration</b> <ul style="list-style-type: none"> <li>• SPAWAR HQ Seaport- E</li> </ul>	<b>FY 13 and Beyond</b> <ul style="list-style-type: none"> <li>• RFP 1QFY13</li> </ul>
<b>JEM Increment 1 – Software update, sustainment, and maintenance (includes FMS)</b> <ul style="list-style-type: none"> <li>• SPAWAR HQ Seaport-E</li> <li>• RFP (GFI Technical Package included)</li> </ul>	<b>FY12 and Beyond</b> <ul style="list-style-type: none"> <li>• RFP 1QFY12</li> <li>• Award 2QFY12</li> </ul>
<b>JEM Increment 2 – Development, Integration, &amp; Competitive Prototyping (includes JSTP)</b> <ul style="list-style-type: none"> <li>• SPAWAR HQ Seaport-E</li> <li>• RFP (GFI Technical Package included)</li> </ul>	<b>FY13 and Beyond</b> <ul style="list-style-type: none"> <li>• RFP 2QFY12</li> <li>• Award 1QFY13</li> </ul>



# Program Points of Contact

- **Mr. Scott White, JPM IS**  
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- **Mr. Mike Steinmann, Deputy JPM IS and SSA Director**  
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- **Mr. John Haigis, Director of Operations**  
[john.haigis@jpmis.mil](mailto:john.haigis@jpmis.mil)
- **Mr. David Godso, JPM IS Chief Engineer**  
[david.godso@jpmis.mil](mailto:david.godso@jpmis.mil)
- **Mr. Thomas Smith, JEM Acquisition Program Manager**  
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- **Mr. Mike Steinmann (acting), JWARN Acquisition Program Manager**  
[Michael.steinmann@jpmis.mil](mailto:Michael.steinmann@jpmis.mil)



# JPM GUARDIAN

7-8 September 2011

Integrated Base Defense (IBD)

Trail Boss

**COL BRETT BARRACLOUGH**  
JPM GUARDIAN  
Joint Program Executive Office  
for Chemical and Biological Defense  
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**MR. RYAN MADDEN**  
Joint Science and Technology Office/  
Defense Threat Reduction Agency (DTRA)  
*ryan.madden@dtra.mil*

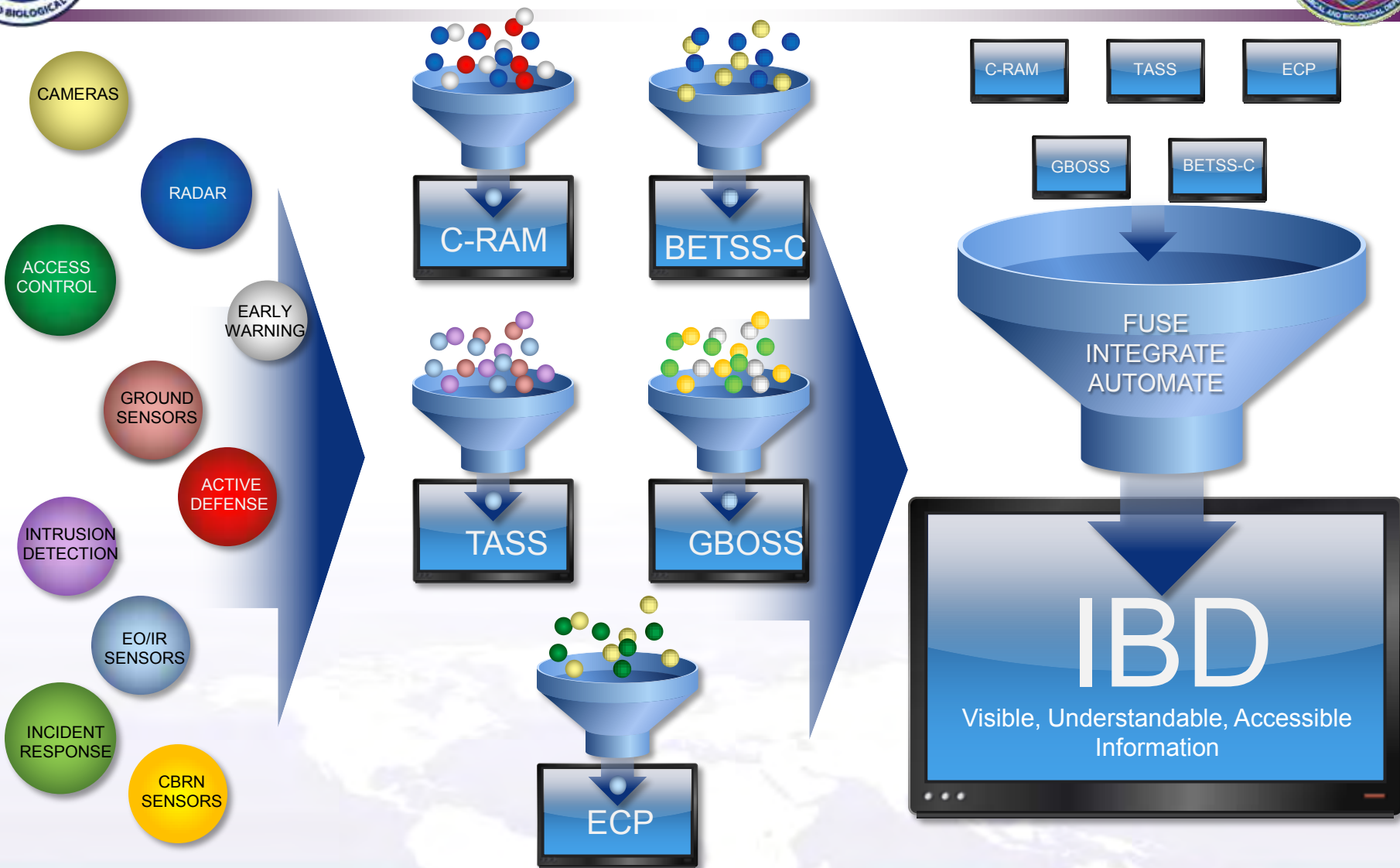
# Integrated Base Defense Overview

- Integrated Base Defense is an overarching concept of Force Protection that encompasses an Enterprise Architecture that is scalable between Fixed Site, Semi-Fixed / Expeditionary, and Mobile (deployable Force Protection) leading to improved Information Management, Fusion, Automation and Integration.





# Integrated Base Defense (IBD)



Stand Alone Sensors

Stand Alone Systems

Integrated Systems



# Integrated Base Defense Capabilities / Challenges

## Capabilities:

- The Guardian I-IBD technical solution and “Road Map” fulfills the CENTCOM interoperability requirements gap for base defense systems in the near term
- The Guardian I-IBD Increment 2 solution is the most efficient approach until all systems have an Authority to Operate (ATO) for International Security Assistance Force (ISAF) Secure Network

## Challenges:

- Currently JPM Guardian is working the following approved Joint Urgent Operational Needs (JUONs) for IBD Execution:
  - Interim Integrated Base Defense (I-IBD) Increment 2
  - Entry Control Point (ECP) / Non-Intrusive Inspection System (NII)
  - Rapid Reaction Tunneling Detection (R2TD)
- JPM Guardian is working the following Emerging Operational Requirements:
  - Combat Outpost Surveillance Force Protection System (COSFPS (KRAKEN))
  - Force Protection (FP) Integration

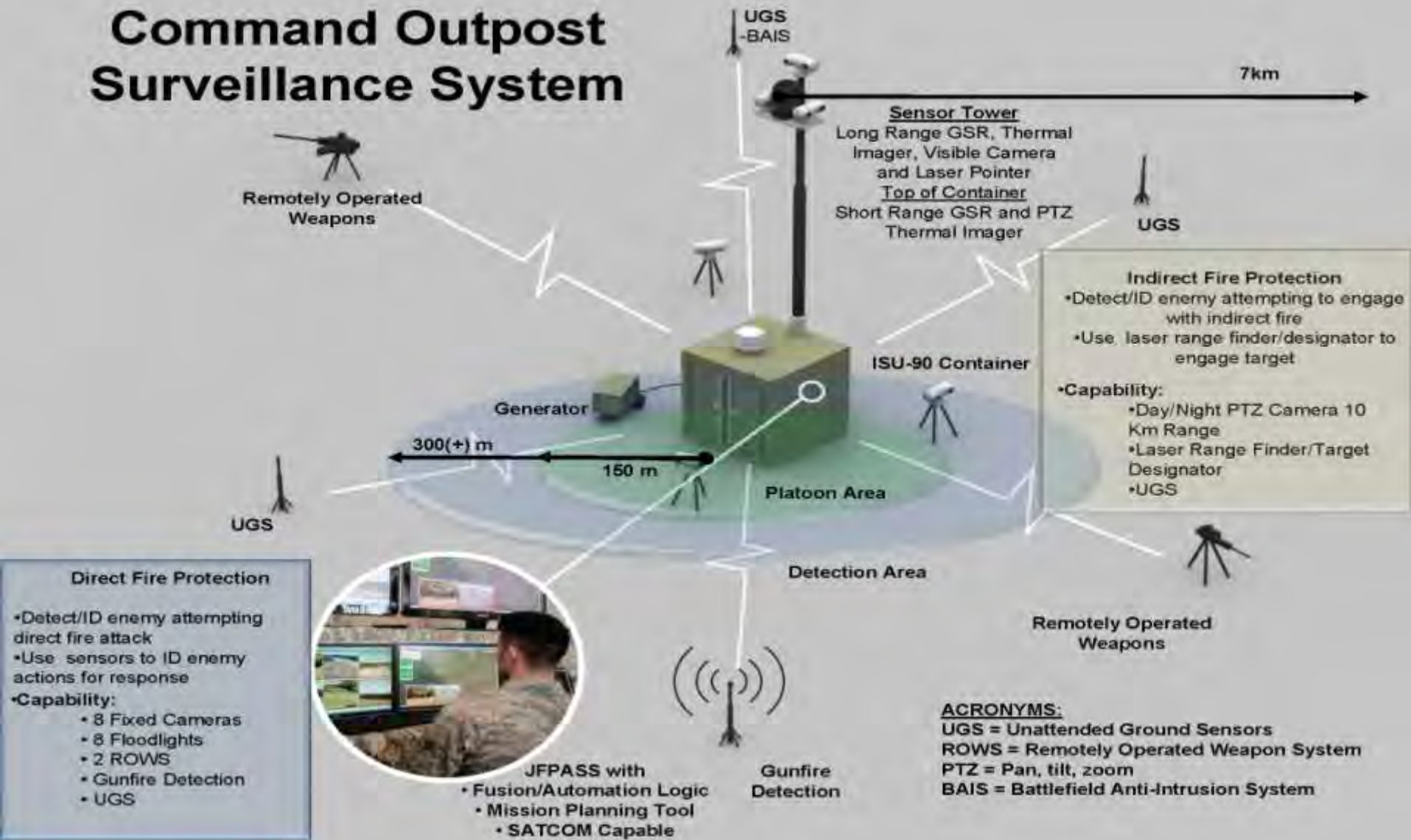


# DEPLOYABLE FORCE PROTECTION



# Command Outpost Surveillance Force Protection System (COSFPS)

## Command Outpost Surveillance System



# COSFPS (KRAKEN)

**Description:** A Rapid Equipping Force (REF) initiative that provides mast-mounted long range monitoring capabilities for multiple combat outpost missions:

- Direct Fire Mission: Detect enemy attempting a direct fire attack and provide automated detection, identification and response
- Long-Range Threat Mission: Detect and identify an enemy attempting to engage with long-range fires and use radar and/or laser designator to get rounds on target

**Requirement:**

- Systems needed to support surge effort.
- Threat to Forward Operating Bases (FOBs) and COPs during drawdown

**Execution Strategy:**

- Three systems projected to be fielded into AOR not later than 1QFY12
- One system will remain in CONUS to support Network Integration Exercise / Network Integration Rehearsal (NIE/NIR) experimentation in Oct 11
- Working on near/long term improvements/enhancements to the COSFPS
- Working with REF and Theater to obtain funding for additional systems





# NTA Trail Boss

September 7, 2011

## Advanced Planning Briefing to Industry

COL Daniel J. McCormick  
JPM NBC CONTAMINATION AVOIDANCE  
Joint Program Executive Office for  
Chemical and Biological Defense





# Governance



- **DOD Strategic Plan**
  - Prioritizes threats, commodities and missions
  - Near, mid and long term
  - 2009 Over Guidance Issue Submission
  - FY 10-12 NTA Program Plans
- **National RDA Plan**
  - DoD, DHS & OSTP
  - National Defense Strategy and Priorities
- **Security Classification Guide**
  - OSD Approved February 2010 (OMB adopted May 2010)
  - Supersedes July 2008 SCG
  - Update review currently underway

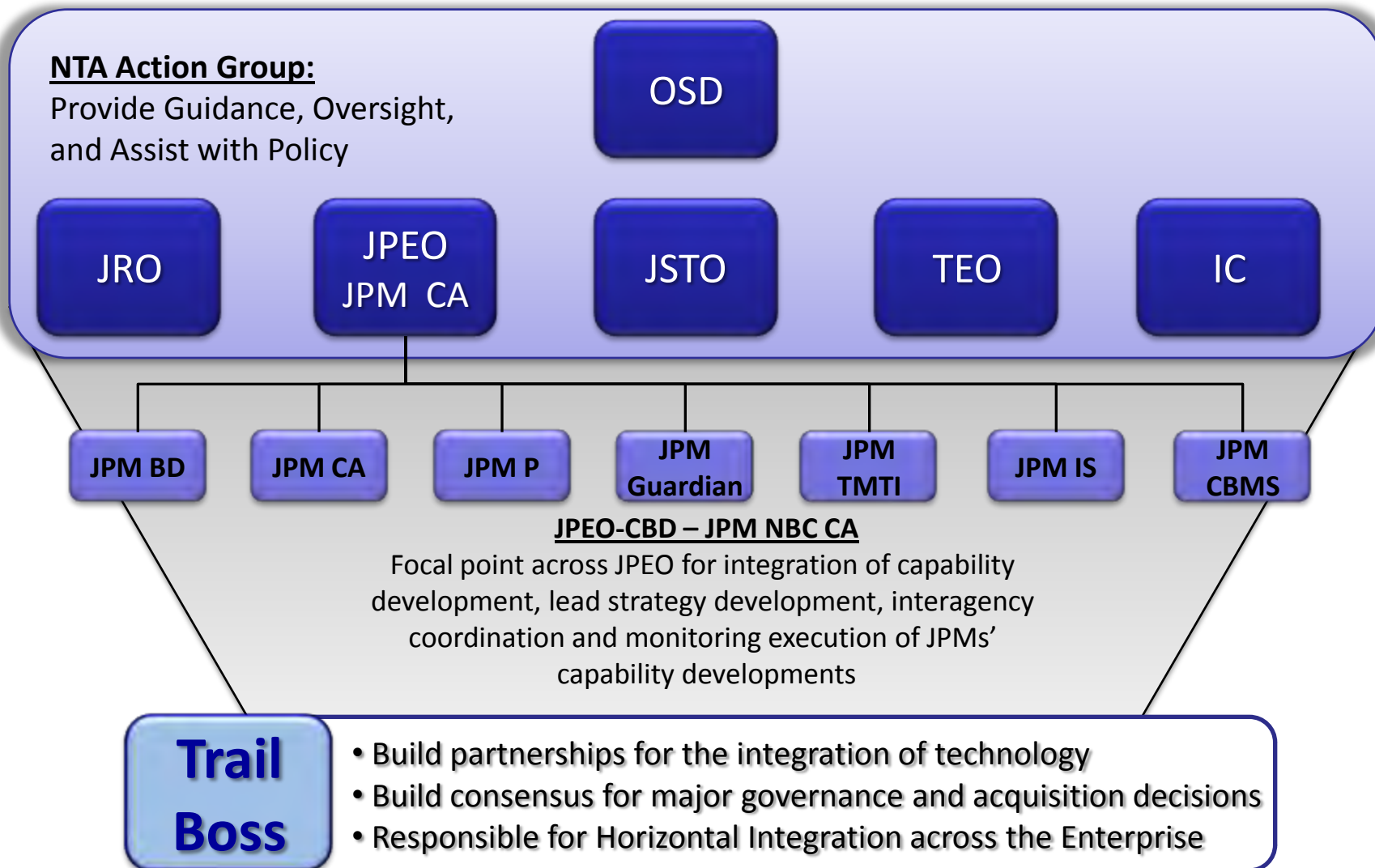
# “Trail Boss” Concept

- **JPEO designates Trail Boss in order to:**
  - Serve as focal point across JPEO for capability development for given topic
  - Lead strategy development
  - Monitor execution
  - Coordinate interagency
- **JPMs still execute component capability development**
- **JPM NBCCA has been designated “Trail Boss” for Emerging Threats**
  - Serve as the synchronization and integration office for related activities across the JPEO CBD
  - Represent the organization at Stakeholder meetings
  - Disseminate guidance across JPEO
  - Facilitate activities to achieve OSD objectives, manage Stakeholder expectations
  - Assist JPMs to meet project goals, while aligning with current Acquisition Programs & program strategies
  - Manage detection projects
  - Integrate specific cost, schedule and performance achievements for headquarters' reporting





# JPEO-JPM CA Role within CBDP





# NTA Trail Boss



**DELIVERING AN INTEGRATED  
NATIONAL DEFENSE CAPABILITY TO  
PROTECT THE WARFIGHTER AND HOMELAND  
FROM EMERGING THREATS**



Detection

**IIEAR**  
Bulk ID  
Sensitive Site  
Assessment

**MD**  
Trace ID  
Environmental  
Monitoring

**FAR**  
Wide Area  
Early Warning /  
Standoff



Medical Countermeasures

**IIEAR**  
Patient Care  
TTPs

**MD**  
Therapeutics

**FAR**  
Pre-Treatment



Contamination Mitigation  
(Decontamination)

**IIEAR**  
Respond  
(Immediate/Operational)

**MD**  
Recover  
(Thorough)

**FAR**  
Restore  
(Clearance)



Individual Protection

**IIEAR**  
Level A  
MOPP

**MD**  
MOPP  
Enhancement

**FAR**  
Integrated  
Protection



Test Infrastructure

**IIEAR**  
Glove Box

**MD**  
NTA Chamber

**FAR**

***Deliver Integrated Solutions to Continually Increase Warfighter Capability***





# Needs

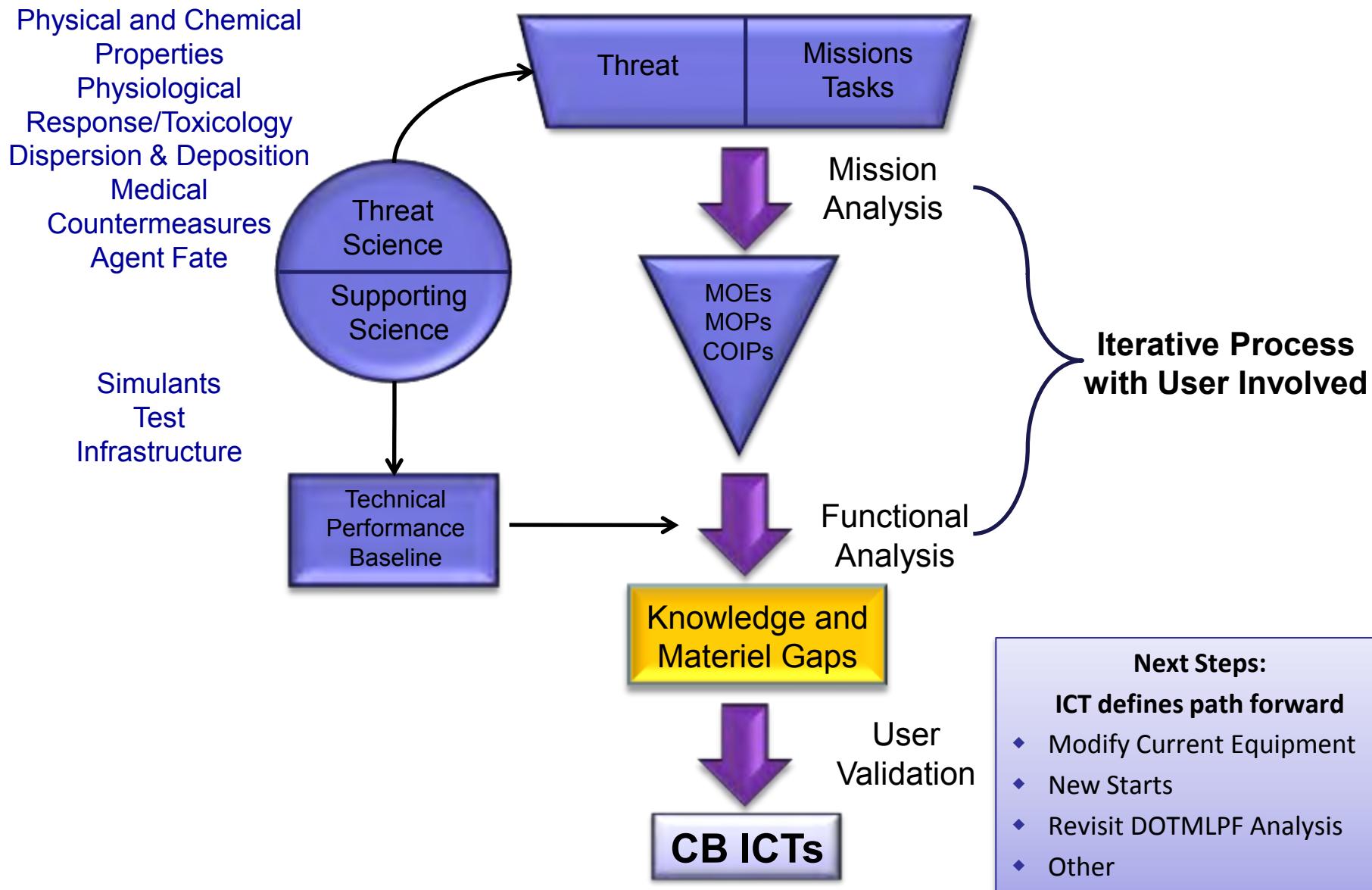


- Detection: Environmental Monitoring, Standoff Detection, Field-ready Confirmatory ID
- Medical: Improved Treatments, Early Diagnostics, Surveillance
- Decon: Agent Defeat Solutions, Equipment Barriers
- Protection: Lightweight materials, closures
- Test: Standard Methods, Challenge Levels, Whole-System Test Infrastructure (NFPA certification of any mask)

Strong need for new and innovative systems



# Influencing the Requirements Analysis Process





# NTA Trail-Boss Programs of Interest



PD/JPM	Program	FY12	FY13	FY14	FY15	FY16	FY17
JPM CA	NTA Detect						
JPM CA	NTA Chamber						
JPM CA	NGCPD						
JPM CA	DR SKO / DR SKO II						
JPM CBMS	BioScav						
JPM CBMS	INATS						
JPM CBMS	AAS						
JPM CBMS	CANATS						
JPM Decon	DFOS						
JPM IP							





# JPM NBC Contamination Avoidance Contacts



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Joint Project Manager  
NBC Contamination Avoidance
- ♦ Mrs. Nancy Kammerer  
Deputy Joint Project Manager  
NBC Contamination Avoidance
- ♦ Mr. Richard C. Floyd  
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Cross-Commodity Advanced Threats  
& Test Infrastructure

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# Biosurveillance Trail Boss

Joint Program Executive Office for Chemical and Biological Defense

**Jason W. Roos, Ph.D.**  
**Acting Joint Product Director-Biosurveillance**  
**(provisional)**  
**Chemical Biological Medical Systems**  
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**September 7, 2011**

*Distribution Statement A: Approved for Public  
Release; Distribution is Unlimited*

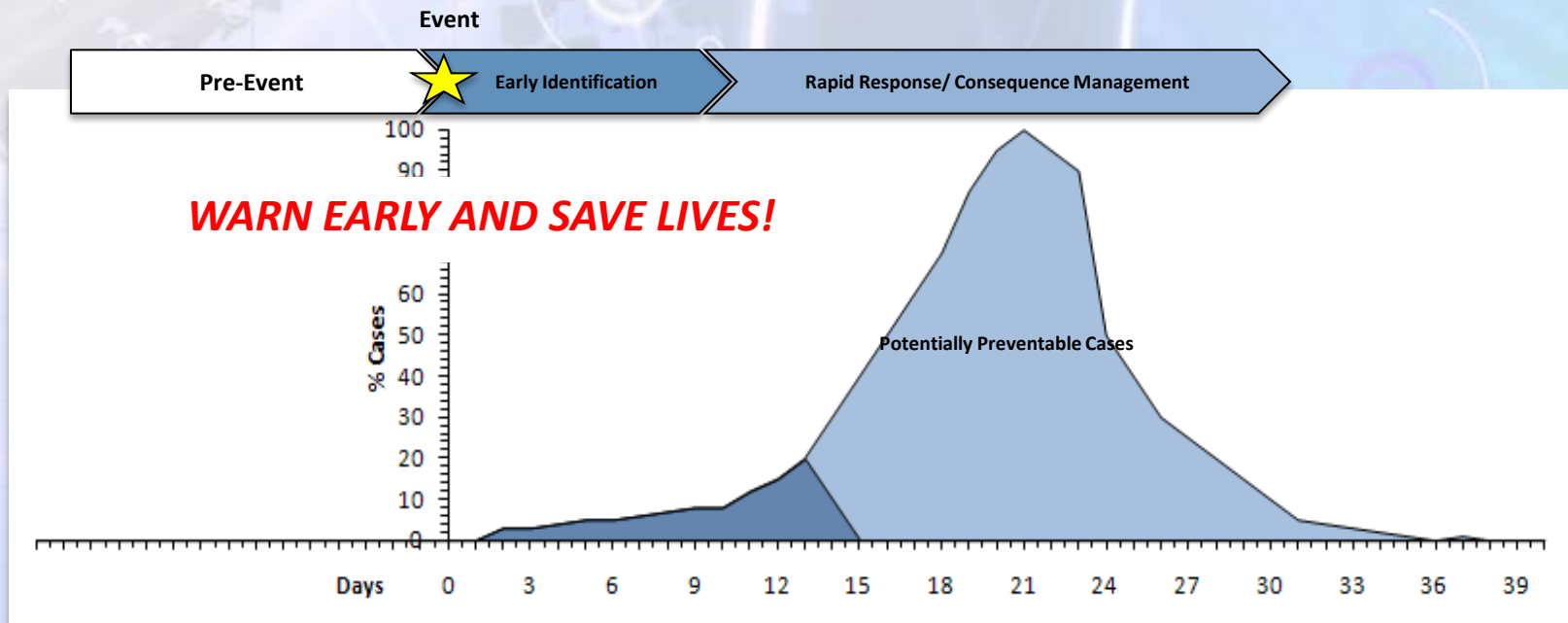




# Biosurveillance Defined

## Biosurveillance Definition

*"The term **"biosurveillance"** means the process of data-gathering with appropriate analysis and interpretation of biosphere data that might relate to disease activity and threats to human or animal health – whether infectious, toxic, metabolic, or otherwise, and regardless of intentional or natural origin – in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity."* (HSPD-21)



WHO World Health Report 2007





# Continuum of Biosurveillance

## Integrated Global Biosurveillance and Situational Awareness



**Identify, Reduce, and Respond to Bio Threats, Global Epidemics, Pandemics  
.... And Ensure Mission Readiness**



# Biosurveillance: Global Approach

*\* This graphic is a representative example and may not be exhaustive*



## In-Reach

Coordinating integration across the DoD spectrum

## Out-Reach

Establishing interagency and international partnerships to leverage global assets



# JPEO-CBD Biosurveillance Trail Boss

## Roles

- Biosurveillance Trail Boss is the lead for identifying and integrating next-generation and existing JPEO-CBD programs/capabilities that are relevant to supporting national Biosurveillance strategies as defined in Homeland Security Presidential Directive 21
- CBMS includes the JPM Biosurveillance (Provisional) Office which executes Trail Boss activities and brings together key BSV programs under one leadership (ex. Diagnostics, CRP)

## Responsibility

- The overall goal of the Biosurveillance Trail Boss is to integrate the JPEO-CBD core competencies across internal and external stakeholders to achieve strategic goals



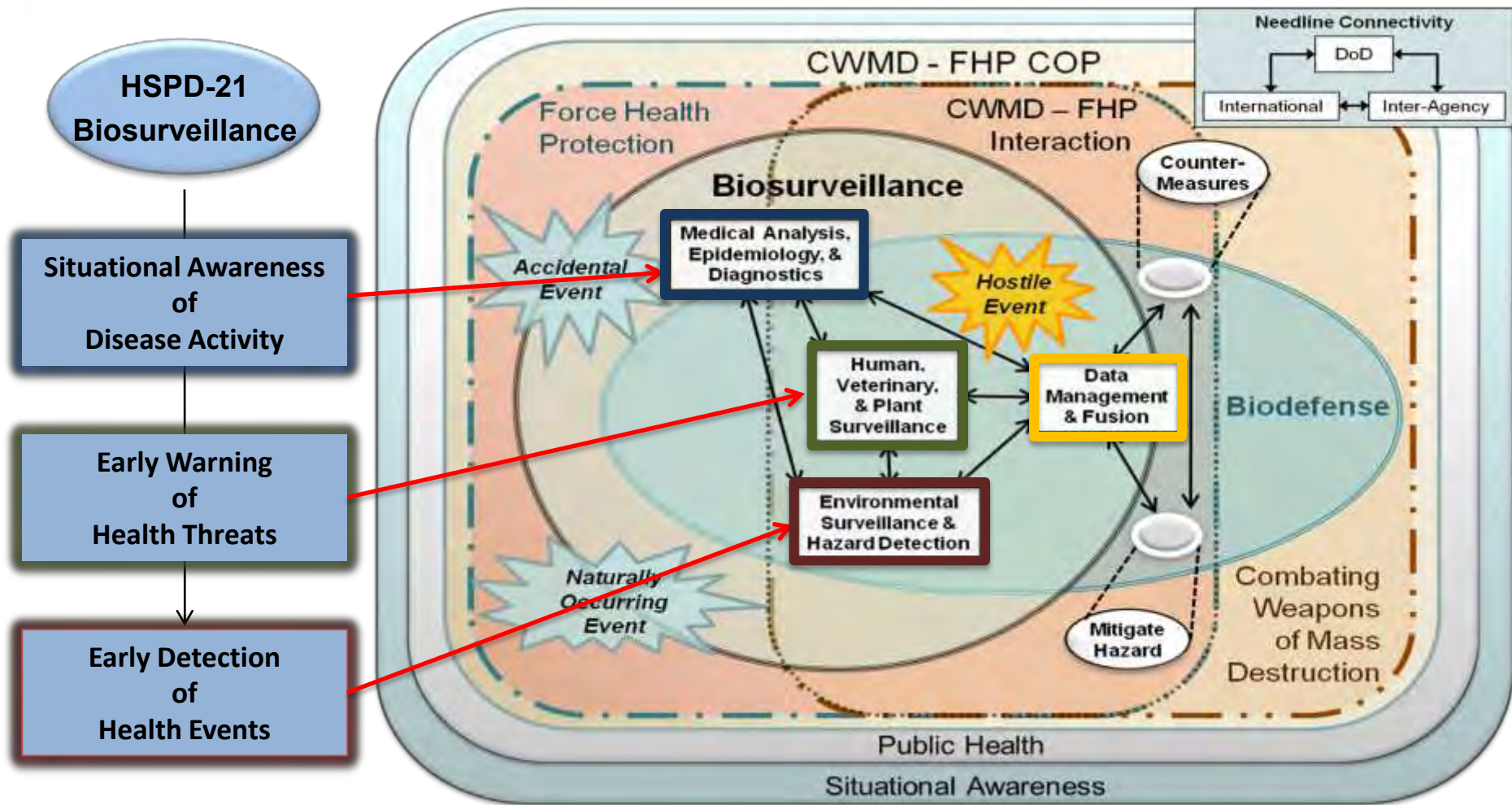
***JPEO-CBD's mission is to, "Provide Research, Development, Acquisition Fielding and Life-Cycle Support of Chemical, Biological, Radiological and Nuclear Defense Equipment, Medical Countermeasures and Installation and Force Protection Integrated Capabilities Supporting the National Strategies."***





# DoD Biosurveillance OV-1

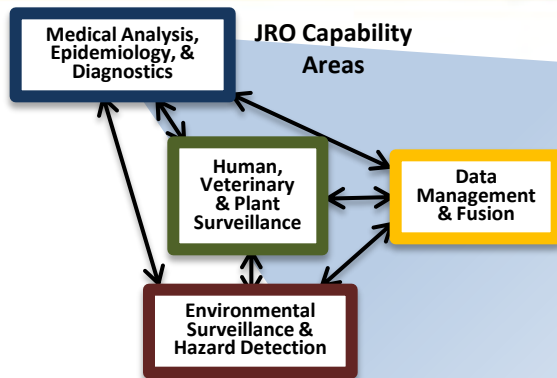
Pre-decisional - Joint Requirements Office 2011





# New Efforts in Biosurveillance

## (Pre-decisional)



**As-Is**

- Threat Specific
- Traditional Threats
- Fixed Architectures
- Stand Alone Data (Med  $\neq$  Env)
- Stovepipe IS (CBDP  $\neq$  FHP/ PH)

**To-Be**

- Threat Agnostic
- Non-traditional Threats (EID/AT)
- Modular/ Flexible Architectures
- Fused Data (Med = Env)
- Integrated IS (CBDP = FHP/ PH)

- **Diagnostics (Funded FY12 POM)**

- Provides the war-fighter with an integrated system for detection, rapid identification, and diagnostic confirmation of CBRN threats

- **Environmental Biological Surveillance (EBS)**

- Provides Warfighter with a comprehensive and adaptive capability to detect and identify plant, animal and human pathogens in environmental sample matrices and a advanced front-end instrumentation to feed BSV tools and models.

- **Joint Biosurveillance Communications Framework (JBCF)**

- Provides Warfighter the ability to extract and fuse CBRN medical, environmental and incident management data from sensors, diagnostic platforms and IT-systems in a robust system that can “plug and play” with networks around the world.

- **Rapid Assay Response System (RARS)**

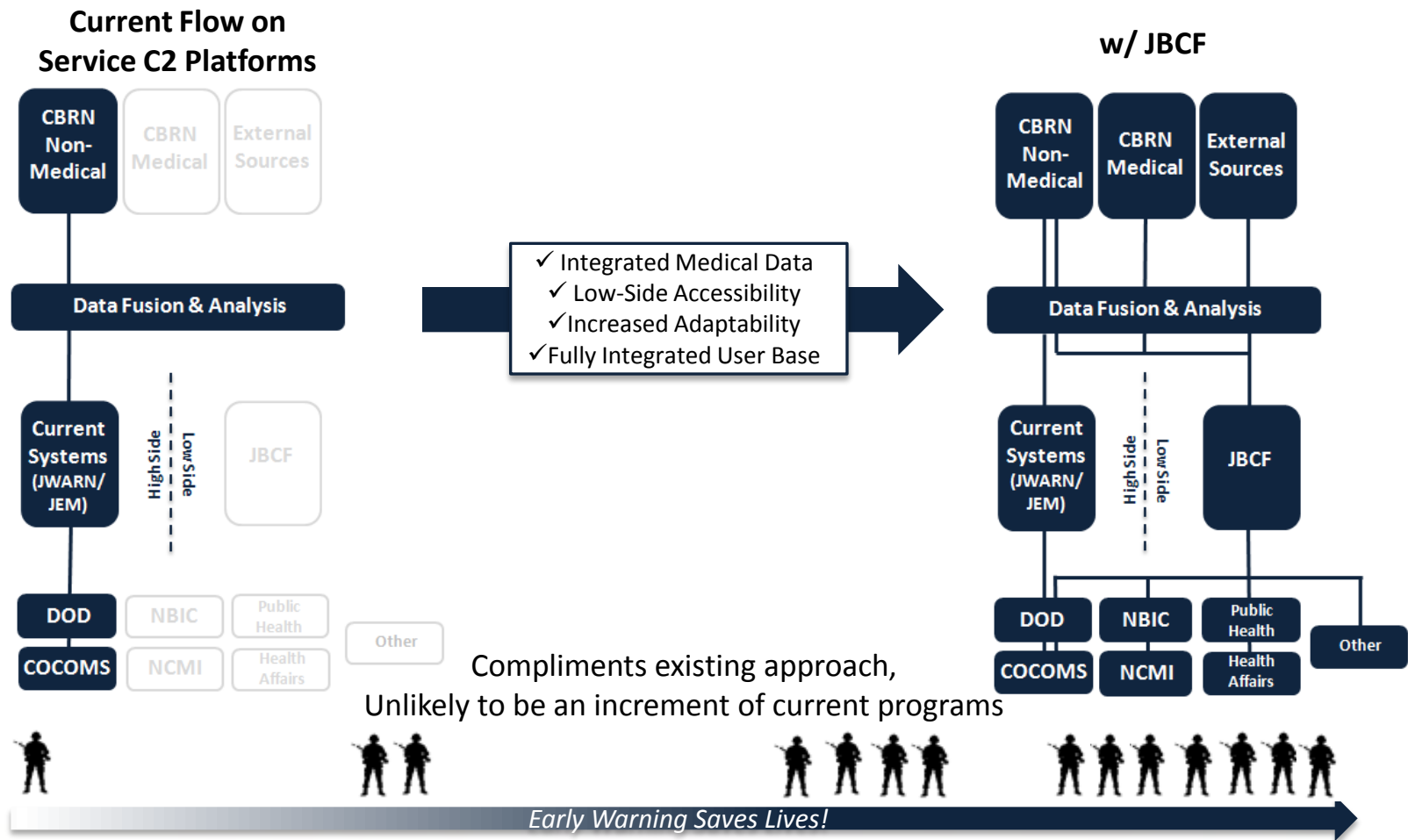
- Provides Warfighter with a faster, agile and more accurate diagnostic capability that will increase the speed and accuracy of a post-event diagnostic/detection response.





# Joint Biosurveillance Communications Framework (JBCF)

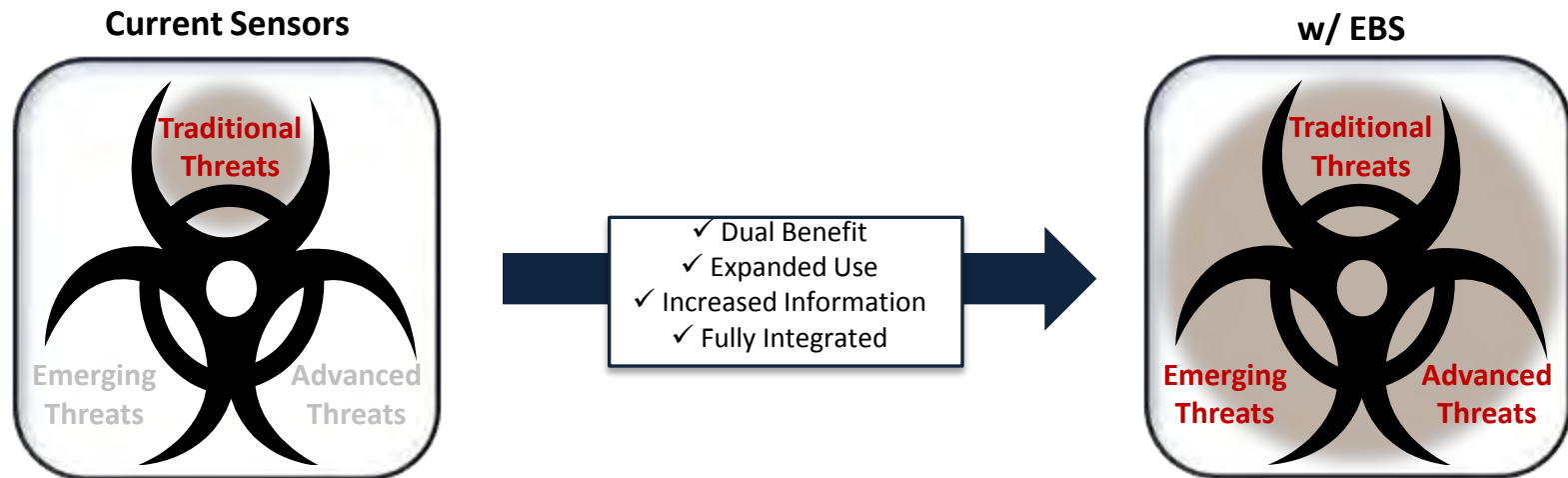
**Material Solution Approach:** Provide common enterprise framework for an open, standardized DISA- approved, web based, service oriented architecture tools for managing biological events in real-time between DOD and Non-DOD Communities.





# Environmental Biosurveillance System (EBS)

**Sensor Materiel Solution Approach:** Emerging Concepts of Employment and threat require sensors adaptable to pre- & post-event bio events; near real-time confirmation; expandable to meet emerging and advanced threats



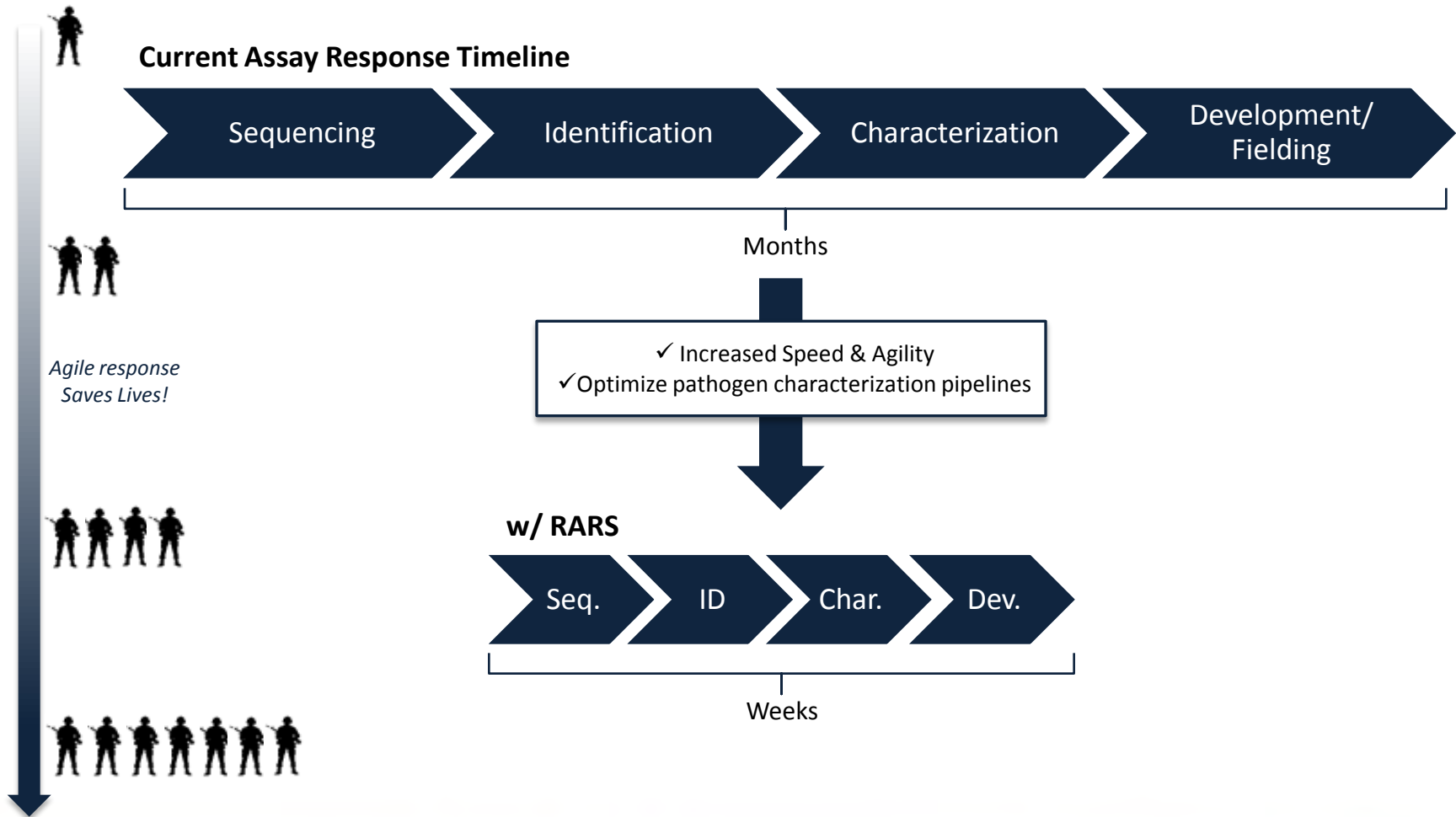
EBS will likely be a family of sensors/capabilities for a broader user set that in turn is complimented by existing sensors under certain concepts of employment envisioned in the BSV OV-1





# Rapid Assay Response System (RARS)

**Material Solution Approach for Assay Development:** Emerging concepts of employment and threat response require flexible and agile assay capability.





# Biosurveillance

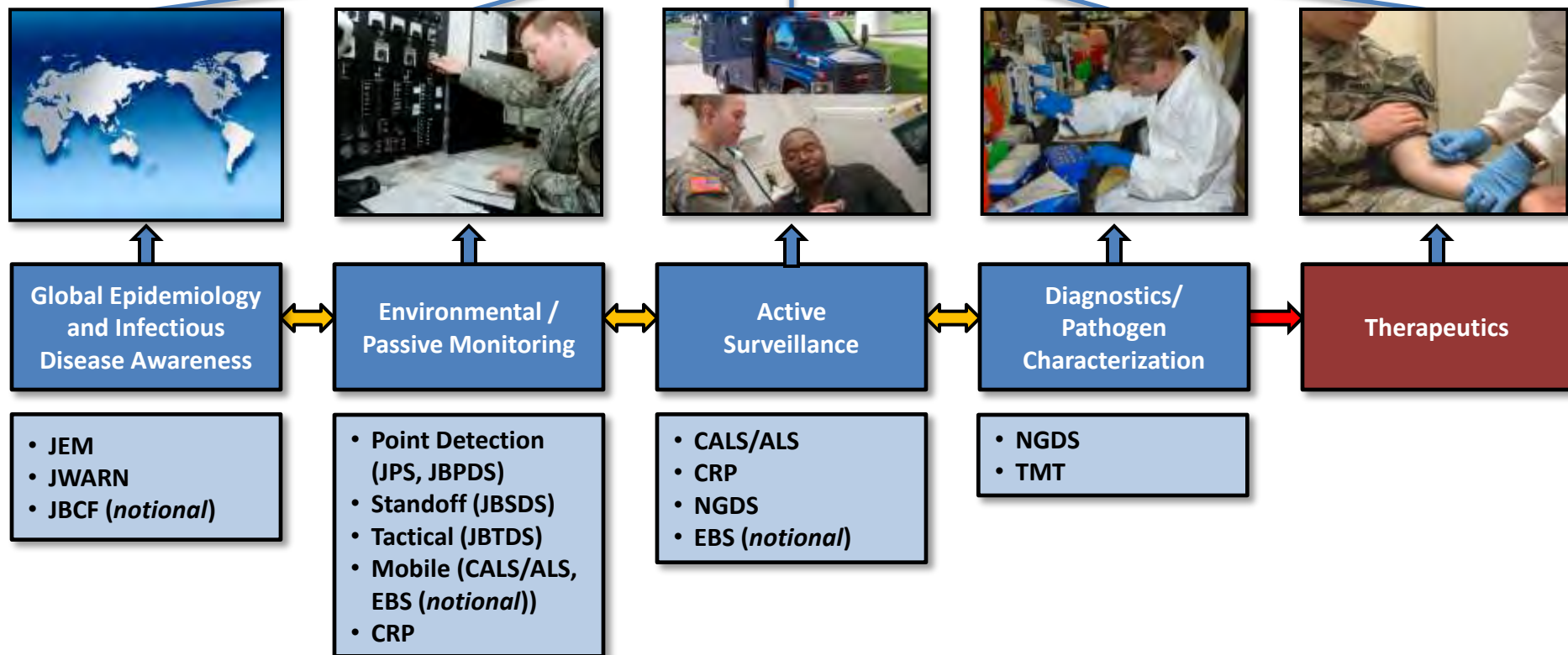
- **BSV Market Survey**
  - Hardware Technologies
  - Software Technologies (TBD)
- **Threat Analysis/Studies**
  - National Center for Medical Intelligence (NCMI)
  - JHU-APL Threat Study
- **Vector Sample Prep Study**
- **Pre-positioned Emergency Use Authorization (EUA) Packages for Diagnostics**
- **Able Response Exercise**





# Continuum of Biosurveillance

## Integrated Global Biosurveillance and Situational Awareness



Identify, Reduce, and Respond to Bio Threats, Global Epidemics, Pandemics  
.... And Ensure Mission Readiness





# Needs from Industry to Support Biosurveillance

- **Indications and Warnings**
  - Predictive disease modelling
  - Modelling/analysis tools
  - Understanding disease at human-animal interfaces
- **Tools to surveil normal health activity**
  - Vector-borne disease tracking
  - Endemic disease mapping
  - Sample characterization
- **Detection/Diagnostics**
  - Point of care diagnostics
  - Lightweight systems
  - Flexibility to expand targets
- **Information Systems**
  - Tools for data fusion
  - Medical informatics/public health expertise
  - Development of a data trust tier to facilitate data sharing across multiple COIs and models
  - Development of data intermediary capabilities to facilitate data sharing between multiple producers and consumers



**Questions?**

UNCLASSIFIED



# APBI Conference

*Joint Program Executive Office for Chemical and Biological Defense*

**Jess A. Scarbrough**  
**Brigadier General, USA**  
**Joint Program Executive Officer**  
**for Chemical and Biological Defense**  
**703.681.9600**

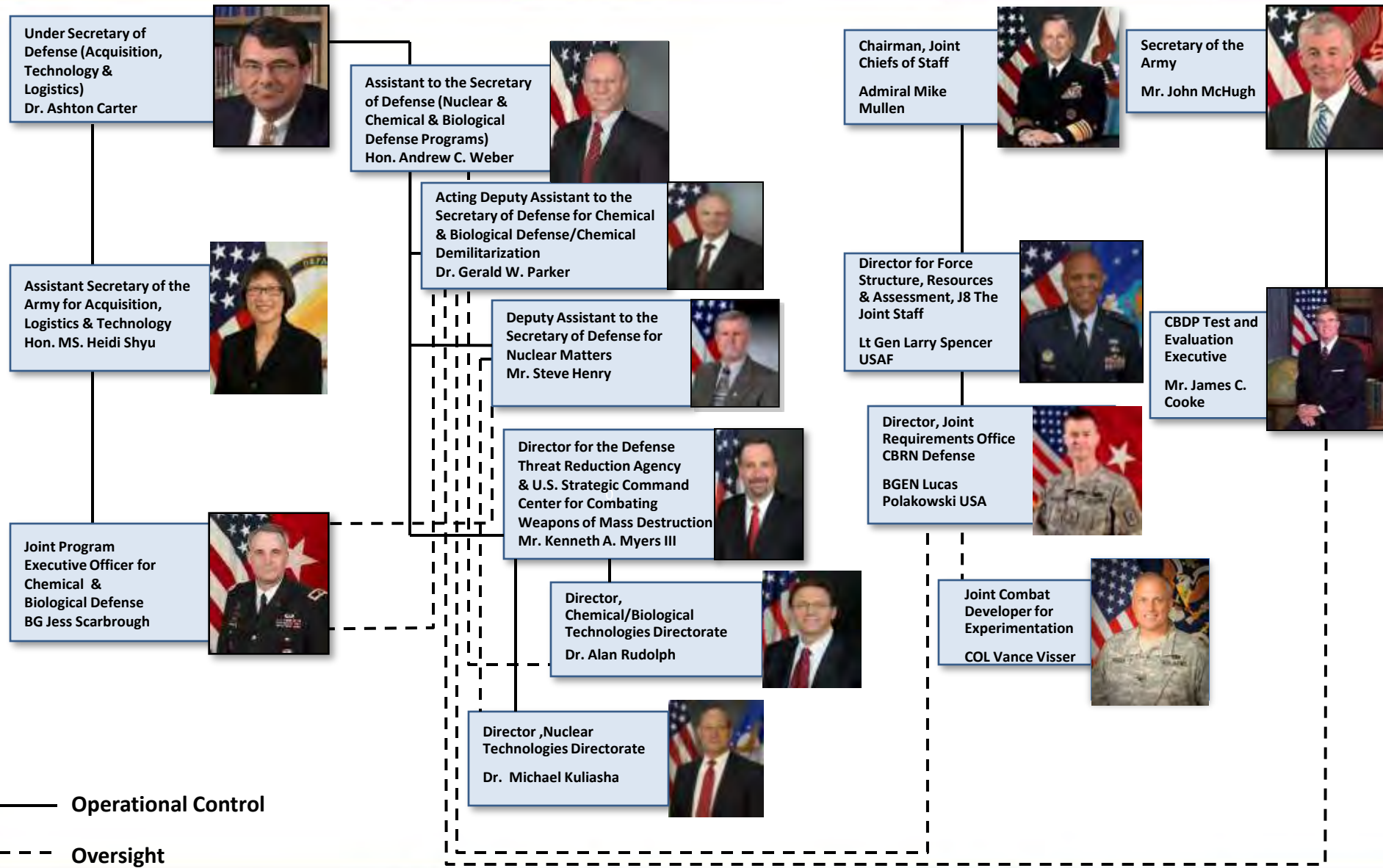
**September 7, 2011**







# CBRND Program Leadership





# The Joint Program Executive Office for Chemical and Biological Defense

DoD  
Army  
Navy  
Air Force  
Marines



\* Transformational Medical Technology

UNCLASSIFIED



*The BEST Technology and Equipment  
At the RIGHT PLACE  
At the RIGHT TIME  
At the RIGHT COST*

**BG Jess A. Scarbrough**

<http://www.jpeocbd.osa.mil>

**JPEO-CBD**

Joint Program Executive Office for  
Chemical & Biological Defense  
(703) 681-9600



# Advanced Planning Briefing to Industry

## September 2011

**Randolph Laye**  
**Deputy Director**  
**Engineering Directorate**  
**Edgewood Chemical Biological**  
**Center, RDECOM**



**Kent Schmitz**  
**Acting Director**  
**Chemical Biological Defense**  
**Product Support Integration**  
**Directorate, TACOM LCMC**





# CB Defense Science & Technology



## DETECTION



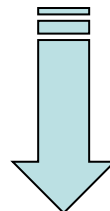
## INFORMATION SYSTEMS



## PROTECTION



**TRA**



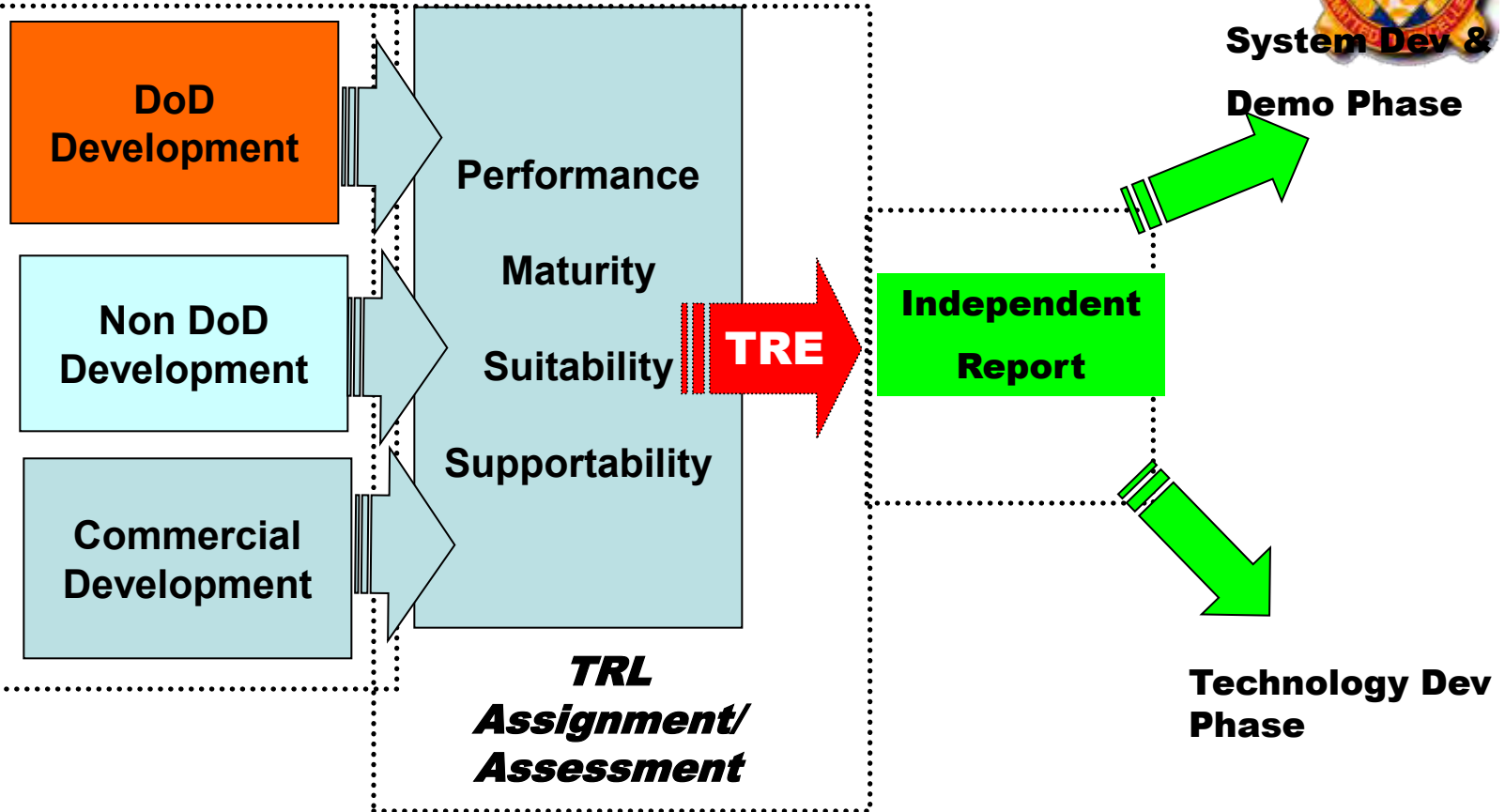
➤ **REDUCED RISKS**  
➤ **SUCCESSFUL DEVELOPMENT**

## DECONTAMINATION





# Technical Readiness Assessment (TRA) Strategy



- **TRAs** — Process to determine Technology Readiness
- **Technology Readiness Evaluation (TRE)** – the event/test in the TRA Process
- **Outcome** – Technology Transition or Technology Development
- **TRL** - Technology Readiness Level



# TRE/TRA Payback Benefits



- **What Contractors Get:**
  - Chance to Test Their System at Government Sponsored Facility
  - Independent Snapshot Assessment of Maturity
  - TRL Assignment and Summary Report on System Performance
  - Assistance in Determining Technical Voids
  - TRE Test Report to JPEO CBD and JPMs
- **What Government Gets:**
  - Technology Applications for Insertion
  - Awareness of Vendors with Mature Systems
  - Potential Reduction of Acquisition Risk
  - Meeting Warfighter Requirements





# TREs Planned in 2011 And 2012



TRE TITLE	PURPOSE	DRAFT SCHEDULE
Chemical Biological Detection System (CBDS)	Evaluate four (4) vendor-supplied sensor candidates for detection capability against chemical and biological threats	Technology Evaluation Report due 1QFY12
Joint Biological Tactical Detection System (JBTDS)	Evaluate Biological Detection Technology candidates.	Tests planned in FY12 TRA planned for 1QFY13

**POINT OF CONTACT FOR TREs:** Dan Nowak, [daniel.m.nowak.civ@mail.mil](mailto:daniel.m.nowak.civ@mail.mil)  
CBR Technology Evaluation Branch, ECBC, 410-436-5631 or-6471,



# Test Services Agreement (TSA)



**Through formal agreements, ECBC tests technologies and equipment at its facilities for other government and private industry.**

- Authorized under 10 USC Sec 2539b
- Tests are performed for a fee
- Cannot compete unduly with private sector
- All data remains property of company/individual paying for test

Points Of Contact For TSAs:

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Tracey Kelly, ECBC-EA; (410) 436-4438, [tracey.l.kelly.civ@mail.mil](mailto:tracey.l.kelly.civ@mail.mil)

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# ECBC (EA) Test Facility

A robust testing capability supporting all phases of the acquisition cycle to include applied research; development to provide CB “non medical” systems for protection, detection and decontamination; production and sustainment; and novel requirements. Services provided are focused on basic and applied research on new and emerging threats, and complement Department of Army developmental testing capabilities.

**Detector Kits,  
Portable & Lab-  
based**



**Material Permeation/  
Penetration**



**Adsorbent & Filters**



**ASTM & DoD Military Standard 810**



**Large Scale Toxic/Explosives**



**Respirator Systems & Components**





# ECBC (RI) Test Facility



**ISO 9000-2008 Certified Testing**

-Magnetic Particle	-Production
-Dye Penetration	-First Article
-Ultrasonic	-Environmental
-HAZMAT	-Packaging
-UN POP	-Containers
	-MILSPEC



8



# Lab Performance Certification Program

**Certifies COCO and Government Test Facilities for compliance with contract test requirements**

- **TYPES OF TESTING**

- Agent and Simulant Testing
- Physical Properties Testing

- **APPLICATION**

- Production Lot Acceptance
- Shelf-Life Surveillance

- **CERTIFICATION CRITERIA**

- Equipment capable of performing test, or as specified
- Calibration current and verifiable
- Procedures in place and applied
- Documentation maintained and available

- **Ensure the validity of test results**
- **Enhance consistency of testing across multiple labs**
- **Assist in development of test capabilities**





# Industrial Base Program

---



## Mission

Analytical and information technology services in assessing and mitigating risk in the Defense Industrial Base

## Goal

To improve the visibility and agility of the Commercial and Organic Industrial Bases to ensure Warfighter sustainment capabilities are enhanced



10



# Industrial Base Program



## Enablers

- Mitigation of single sources of supply = competitive acquisition
- Acquisition program stability
- Industrial preparedness measures
  - Risk reduction
  - Obsolescence resolution
  - Reduction of foreign sources
- Manufacturing and Technology development investments

## End State

**A robust industrial base capable of meeting current and future DoD manufacturing and maintenance requirements**

# One Stop Shop for CBRN Information



**Chem Bio Radiological Nuclear - Information Resource Center  
(CBRN-IRC)**

**Toll Free: 800-831-4408 Commercial: 309-782-7349 DSN: 793-7349**

**Fax: 309-782-1919 Fax DSN: 793-1919**

**E-mail: [cbrn@conus.army.mil](mailto:cbrn@conus.army.mil)**

**24/7 Support for the CBRN Community**

12



# Points Of Contact

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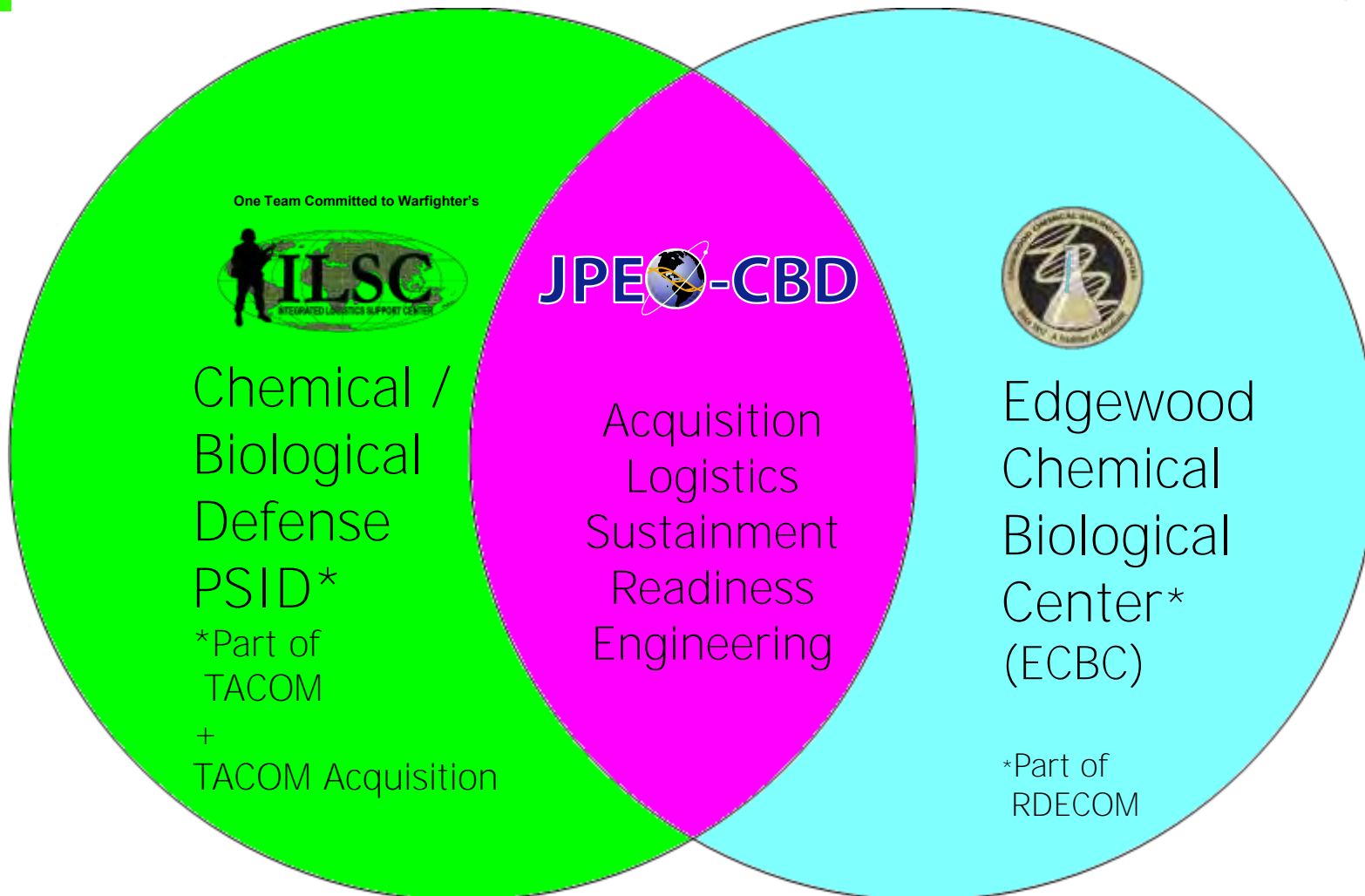
**Permeation & Analytical Solutions Branch Chief**  
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## Engineering Directorate, ECBC @ RIA

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# TACOM-SBC ILSC JPEO & ECBC Partnership







# Projected Totals for FY12-16



• Decontamination	\$ 41,600,000
• Contamination Avoidance	\$ 19,625,775
• Collective Protection	\$ 91,587,100
• Individual Protection	\$ 82,758,387
• Biological Detection	\$ 53,869,350
• Consequence Management	\$ 6,457,640

**TOTAL            \$295,898,252**



# Biological Detection

## FY12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
6665-01-523-3927	COLLECT, PARTICULATE 1000	\$2,205.00	800	\$1,764,000
6665-01-523-3926	COLLECT, PARTICULATE 2000	\$4,158.00	663	\$2,756,754
6665-01-528-9280	IDENTIFIER ASSEMBLY	\$57,717.00	60	\$3,463,020
6665-01-560-7921	IDENTIFIER ASSEMBLY SHIP	\$71,919.00	24	\$1,726,056
6665-01-528-9281	COLLECTOR ASSEMBLY	\$18,897.00	62	\$1,171,614
6665-01-528-9282	FLUID TRANSFER SYSTEM	\$24,981.00	60	\$1,498,860
6665-01-543-0165	LCS COMPUTER	\$9,536.00	62	\$591,232
6665-01-528-9283	JBPDS CONTROL ASSEMBLY	\$16,835.00	60	\$1,010,100
6665-01-554-0754	BAWS 4+ ASSEMBLY	\$89,667.00	60	\$5,380,020
6130-01-540-7916	POWER PACK, SHELTER	\$19,603	30	\$588,090
6665-01-565-7438	POWER PACK, SHIP	\$19,024	20	\$380,480
6665-01-494-8725	BIOLOGICAL SAMPLING KIT	\$822.00	5340	\$3,511,584
6665-01-521-7871	PAR CARRIER ASSEMBLY	\$11,923.00	1830	\$17,455,272
6665-01-526-4780	CARRIER BOX ASSEMBLY	\$6,901.00	130	\$717,704
6665-01-525-7008	CARRIER BOX ASSEMBLY	\$5,613.00	310	\$1,392,024
6665-01-525-7009	CARRIER BOX ASSEMBLY	\$12,365.00	602	\$5,959,930
6665-01-541-8943	CARRIER BOX ASSEMBLY	\$11,732.00	336	\$3,153,561



# Biological Detection (Cont'd)

## FY12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
2540-01-561-8190	LADDER, VEHICLE BOARD	\$725.00	78	\$56,550
5985-01-562-5902	ANTENNA	\$1,103.00	100	\$110,300
4720-01-562-3484	HOSE ASSY, NONMETALLIC	\$320.00	98	\$31,360
4720-01-562-3485	HOSE ASSY, NONMETALLIC	\$308.00	98	\$30,184
4720-01-563-0149	HOSE NONMETALLIC	\$450.00	254	\$114,300
6150-01-561-8174	CABLE ASSEMBLY	\$350.00	39	\$13,650
6685-01-562-4359	PROBE, HUMIDITY-TEMP	\$8,645.00	110	\$950,950
6130-01-566-4115	POWER SUPPLY ASSEMBLY	\$2,087.75	20	\$41,755
<b>SUBTOTAL</b>				<b>\$53,869,350</b>



# Contamination Avoidance

## FY12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
6665-01-333-3631	Battery Assembly	\$64.07	1134	\$72,655.38
6665-01-466-9096	M34A1 SAMPLING KIT, CBR AGENT	\$490.00	220	\$107,800
6665-00-050-8529	M8 PAPER	\$0.97	244,000	\$139,680
6665-01-226-5589	M9 PAPER	\$5.96	250,000	\$1,490,000
6665-01-563-7473	M256A2 CHEMICAL DETECTOR KIT	\$66.48	90,000	\$5,983,200
6665-01-463-4278	M18A3 DETECTOR KIT	\$681.00	1440	\$980,640
6665-01-134-0885	M272 WATER TEST KIT	\$396.00	2,160	\$855,360
3990-01-204-3009	CARGO STRAP	\$19.31	517,682	\$9,996,440
<b>SUBTOTAL</b>				<b>\$19,625,775.38</b>



# Collective Protection

## FY12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
4240-00-807-6856	M3 HEATER	\$220.00	15,000	\$3,300,000
4240-01-363-1311	M48A1 GAS PART F.	\$857.00	10,000	\$8,570,000
4240-01-026-3112	M1A1-19 PRECLEANER	\$813.00	10,000	\$8,130,000
4240-01-365-0982	M18A1 GAS FILTER	\$354.00	10,000	\$3,540,000
4240-00-866-1825	M19 PARTICULATE FILTER	\$87.60	6,000	\$525,600
4240-01-330-7806	M20A1 SCPE	\$17,539.00	1686	\$29,570,754
4240-01-369-6533	M98 FILTER SET	\$1,160.00	50,000	\$58,000,000
4240-01-518-4765	M98 FILTER (GAS)	\$890.00	6,000	\$5,340,000
4250-01-366-6243	HSFC	\$2,474.00	500	\$1,237,000
4240-01-312-9146	M49 (GAS) 5 Trays	\$7,200	500	\$3,600,000
4240-01-363-1310	M23 Gas Filter	\$1,163	500	\$581,500
<b>SUBTOTAL</b>			108,500	<b>\$91,587,100</b>





# Individual Protection FY12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
8465-01-513-8276	BAG, SUIT	\$39.38	790	\$31,110
4240-01-390-3057	SKULL CAP HEAD HARNESS	\$10.87	11,603	\$126,124
4240-01-399-3349	M40 CARRIER	\$15.34	506,442	\$7,768,820
4240-01-260-8706	NEUTRAL OUTSERTS	\$17.14	736,404	\$12,621,964
4240-01-260-8707	CLEAR OUTSERTS	\$16.85	915,865	\$15,432,325
4240-01-361-1319	C2A1 CANISTER	\$12.64	1,848,504	\$23,365,090
4240-01-376-1382	CANISTER CARRIER	\$55.77	117,589	\$6,557,938
4240-01-399-3350	M42 CARRIER	\$16.13	81,457	\$1,313,901
4240-01-413-1540	USS SMALL	\$18.34	167,044	\$3,063,586
4240-01-413-1543	USS M/L	\$19.19	248,217	\$4,763,284
4720-01-515-9261	M42 HOSE	\$30.87	91,400	\$2,821,518
4820-01-260-8703	NOSECUP VALVE DISK	\$6.04	125,897	\$760,417
4820-01-502-7372	OUTLET VALVE DISK	\$5.19	47,949	\$248,855
5965-01-414-2257	M42 MICROPHONE	\$26.05	149,077	\$3,883,455
<b>SUBTOTAL</b>				<b>\$82,758,387</b>



# Decontamination

## FY 12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
6850-01-357-8456	M295 Decon	\$320	80,000	\$25,600,000
4230-01-466-9095	M100 SORBENT DECON	\$80.00	200,000	\$16,000,000
<b>SUBTOTAL</b>				<b>\$41,600,000</b>



# Consequence Management

## FY12-16



NSN	NOUN	Current unit price	Total forecast for item	Projected cost= price X total forecast
COTS	INCIDENT MANAGEMENT SYSTEM	\$9,454	160	\$1,512,640
COTS	LEVEL A/B/C SUITS	\$1,400	1025	\$1,434,000
COTS	ARMY FEM MAXIMO LICENSE FEES	\$2,800	335	\$939,000
COTS	TELEPHONE ALERT SYSTEM SERVICE AGREEMENT	\$15,000	131	\$1,968,000
COTS	GIANT VOICE SYSTEM SERVICE AGREEMENTS	\$4,026	150	\$604,000
<b>SUBTOTAL</b>				<b>\$6,457,640</b>



## TACOM-SBC (RI) POC



Chemical/Biological, Product Support Integration Directorate  
(309) 782-2357, DSN: 793-2357

Division Chief for Contracting

(586) 282-6176, DSN: 786-6176

Joint Program Support Group

(586) 282-1629, DSN: 786-1629

CDE New Initiatives & Support Group

(586) 282-1631, DSN: 786-1631

IP/ Smoke/Detectors Group

(586) 282-1622, DSN: 786-1622

Consequence Mgt, Decon & Col Pro Group

(586) 282-1620, DSN: 786-1620



DRAFT

# **INFORMATION MANAGEMENT/ INFORMATION TECHNOLOGY (IM/IT)**

**8 September 2011**

## **Advanced Planning Briefing to Industry**

**MR. SCOTT WHITE**  
**IM/IT TRAIL BOSS**  
Joint Program Executive Office  
for Chemical and Biological Defense  
*Scott.white@jpmis.mil*



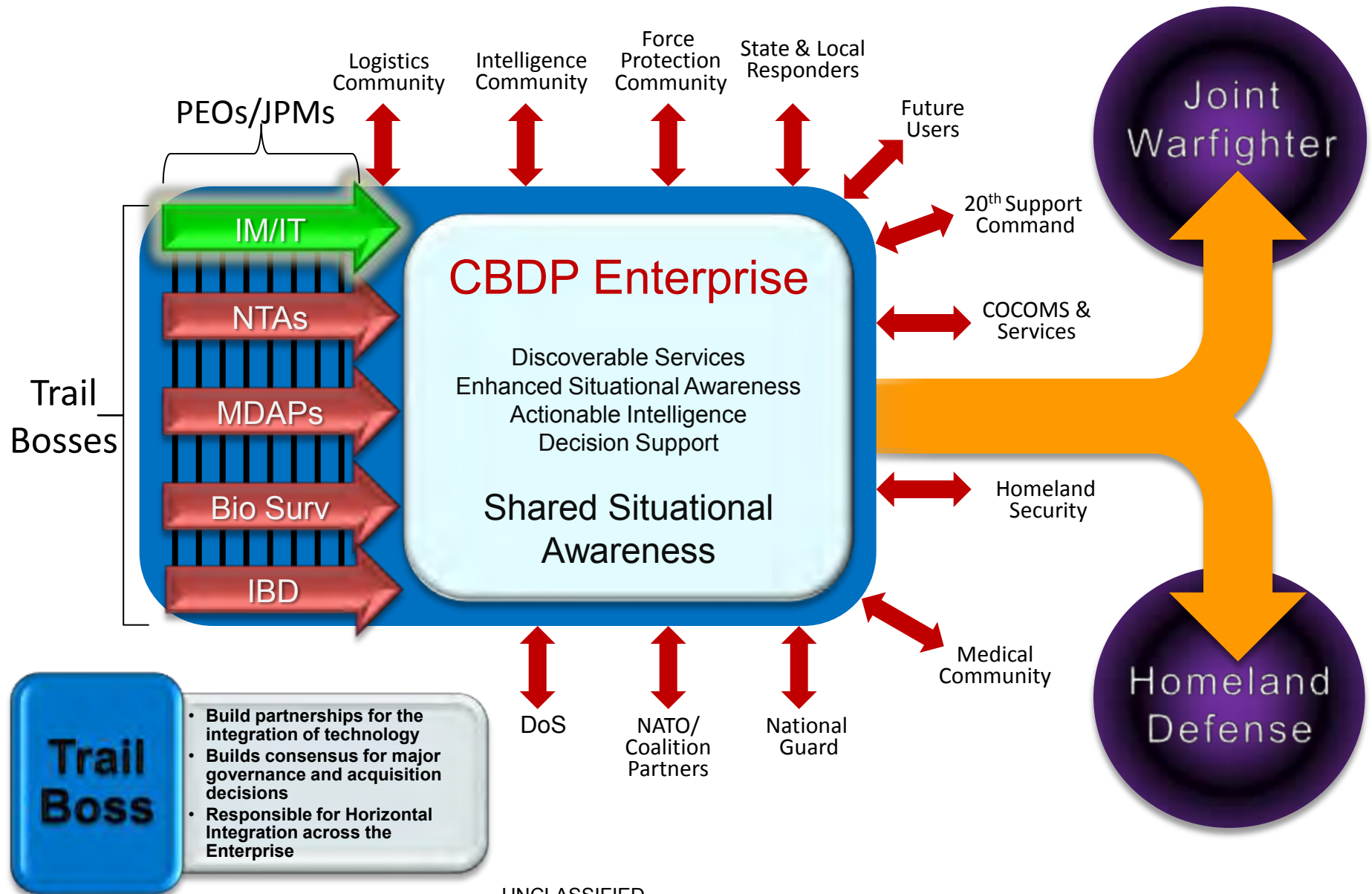


# IM/IT Agenda

- JPEO-CBD Enterprise Management
- The Big Picture
- Benefits of IM/IT Approach
- IM/IT Enterprise Trail Boss Focus
- BSP – U Deployment in USFK
- IM/IT Capability Lifecycle Integration Architecture (CLIP)
- IM/IT Enterprise Book Shelf
- IM/IT Enterprise Systems Engineering (SE)
- Challenges



# JPEO-CBD Enterprise Management



# IM/IT ENTERPRISE



Hardware Systems



Tactical



Installations



Civilian



Medical



Intelligence





# Benefits of IM/IT Approach

The IM/IT Enterprise is composed of:

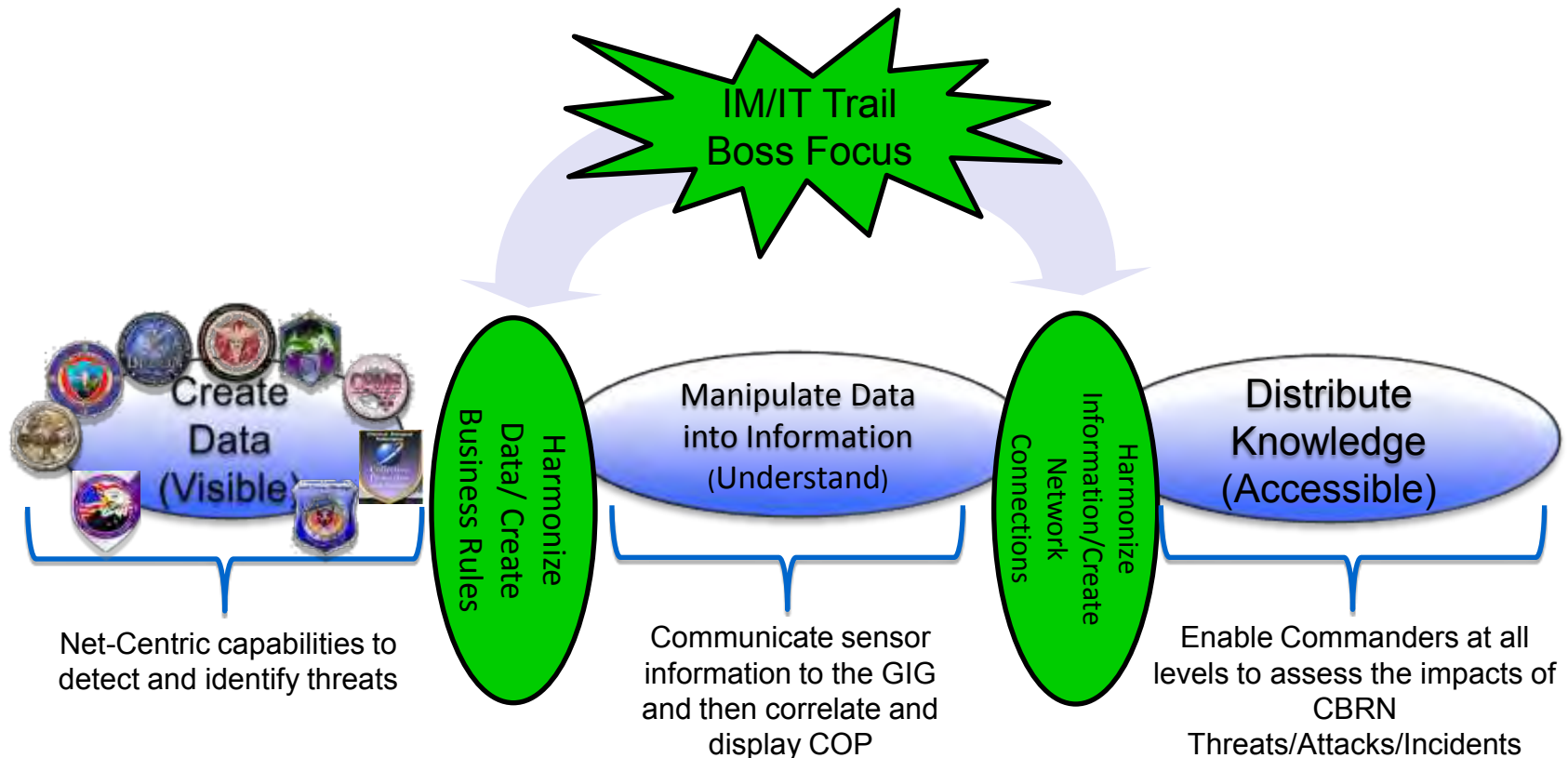
- Reference architecture
  - Common standards and protocols
  - DISA approved services
  - Common data model
- Validated JPEO-CBD services and components
- Standardized development and integration processes
- Fully capable Systems Integration Lab (SIL)
  - Integration of capabilities for Bio-Surveillance and other mission areas
  - Vetting and transition of S&T capabilities
  - Management and support of deployed capabilities

***Delivery of the right information to the right person at the right time***





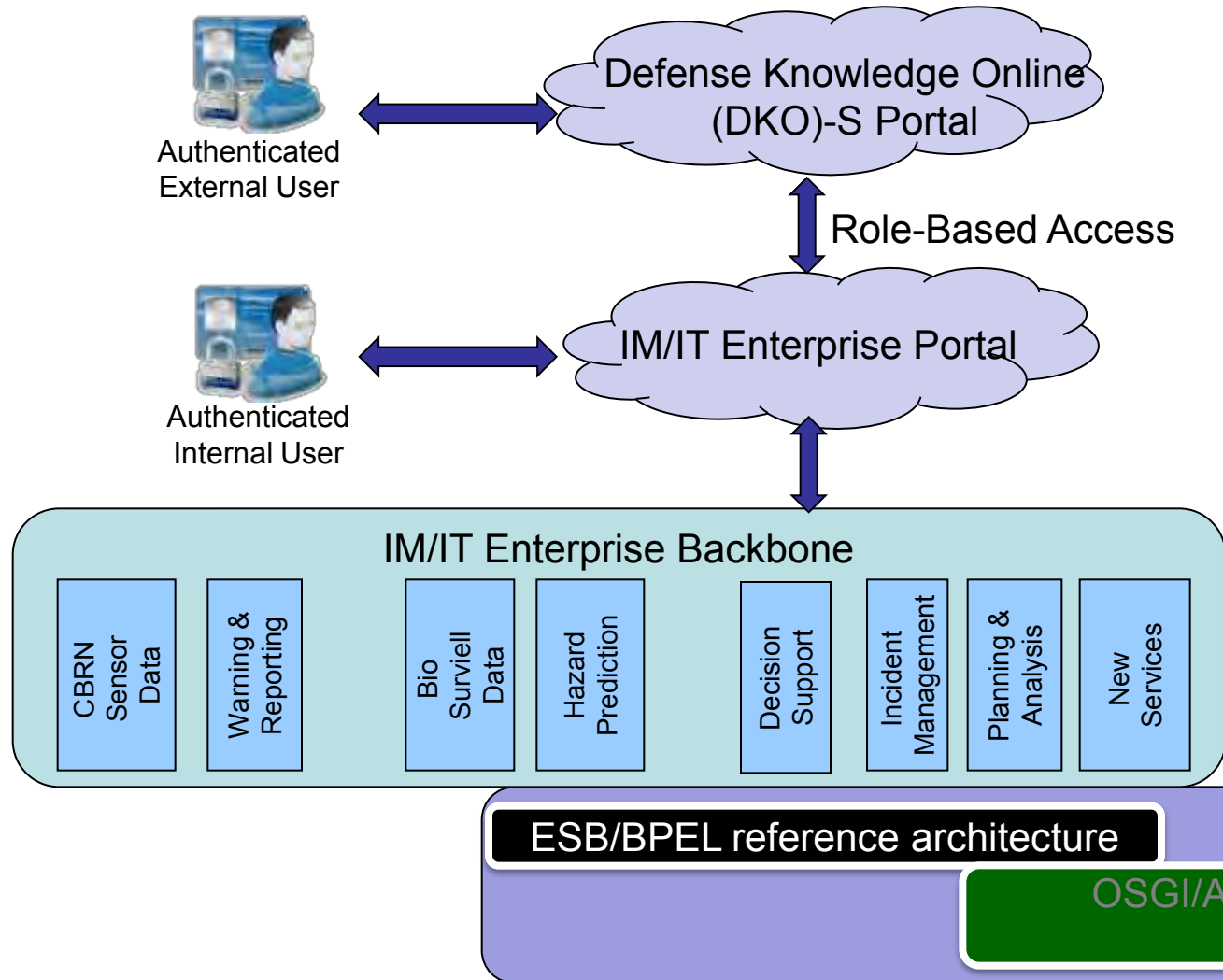
# IM/IT Trail Boss Enterprise Focus







# BSP – U Deployment in USFK



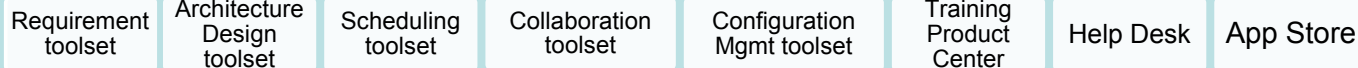
IM/IT Portal internal users have role-based, authenticated access to IM/IT services through a DoD-common portal. The portal provides a bridge between legacy CBD information providers and future systems.

External users will be able to access the IM/IT portal through DKO-S and will be able to access information based on their role and need to know.



# IM/IT Capability Lifecycle Integration Architecture (CLIP)

## Portal Server



- Definition of common integration standards and processes for capturing requirements, Managing Software development processes and Data validation strategy
- Elimination of redundant capabilities thru centralized requirements and configuration management tools
- Comprehensive training products from a common logistic entity
- Comprehensive “one-stop” system support for war-fighters via a unified help desk and Software delivery strategy
- Real time software component services and data that can be easily integrated as tools and services
- Clearly defined organizational roles and responsibilities of information system support within program of record and representation to stake holders
- Expandable and adaptable enduring capability that will continuously leverage emerging technologies

## Production Reference Architecture and Inherited Capabilities

### Application Server

#### JSR-268 Portal reference architecture

Alert Portlet	Map Portlet	Content Mgmt	App Store
---------------	-------------	--------------	-----------

- Actionable data presented both within the IM/IT domain and to external stakeholders (system to system communication)
- Improved access to timely mission critical actionable information thru fused data products
- Expandable and adaptable enduring capability that will continuously leverage emerging technologies

**Delivery of a realized capability module, deployed within the IM/IT production enterprise**

## ESB/BPEL reference architecture

- A messaging and routing subsystem that integrates existing JPEO-CBD information system outputs into an environment that can detect threats, collect and disseminate appropriate data and make relevant information accessible to those who need it – in essence facilitate early warning, assessment and reporting to address an incident.
- A workflow execution engine that utilizes the messaging and routing subsystem to adapt to changing warfighter TTPs and the incorporation of additional capability modules, authoritative data sources, and optimizations within the enterprise

## OSGI/App Server reference architecture

The IM/IT Enterprise will initially integrate appropriate JPEO-CBD stand-alone products into the CMF (mainly JWARN, JEM, CCSI, CCMI, Data Model (and associated Web-Service) and DSS 5.0). Common hardware specifications and interfaces will connect into one location and the software components will be used to normalize the data for IM/IT enterprise client consumption.



# IM/IT Enterprise Book Shelf

Medical Informatics  
for Therapeutics



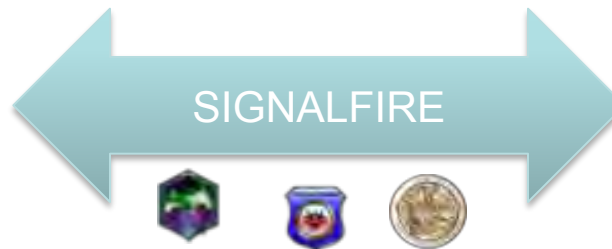
MIL-CIV integration



Warfighter Readiness



Medical Surveillance



UNCLASSIFIED



# IM/IT Enterprise Systems Engineering (SE) Tools

Enterprise Systems Engineering Tools environment established to address consistency and visibility across:

- Requirements Management: Piloting Jama Contour
- Architecture: IBM System Architect (SA) and XT (Web Client)
- Feature / Problem Tracking: ALTASSIAN JIRA
- Software Configuration Management: TeamCity with Subversion and Maven
- Scheduling: Microsoft Project Server
- Collaboration and Knowledge Management: SharePoint / Defense Connect Online (DCO) / Army Knowledge Management (AKO) / Defense Knowledge Online (DKO)



# Challenges

- Standardization of solutions to CBRN Business Domain and Warfighter Domain issues
- Identification of COTS products to enable the IM/IT Enterprise Execution Strategy (cost/licenses are an issue)
- Provision of mature IM/IT platform for Biosurveillance initiatives and programs
  - USFK Biosurveillance Framework (UBF)
  - Joint Biosurveillance Communication Framework (JBCF)
  - Next Generation Diagnostic System (NGDS)
  - Environmental Biosurveillance System (EBS)
  - Global Ops





# Key Points of Contact

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# JPM GUARDIAN

7-8 September 2011

## Advanced Planning Briefing to Industry

COL BRETT BARRACLOUGH  
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# Outline



- DTRA Review
  - Overview
  - Advanced Technology Demonstration (ATD) Goals
  - Science & Technology (S&T) Schedule
  - S&T Funding
  - S&T Business Opportunities
- US Army Engineer R&D Center
  - Rapid Reaction Tunnel Detection (R2TD)
- JPM Guardian Review
  - Chemical and Biological Protection
  - Force Protection
  - Emerging Force Protection
  - Technical Challenges
  - Funding
  - Schedule
  - Business Opportunities



# Overview



## S&T

- Vision
  - Make the Use of Chemical and Biological Weapons of Mass Destruction Irrelevant through Superior Science and Technology.
- Mission
  - Research, Develop, and Demonstrate Innovative Technologies and Capabilities to Mitigate the Threat and/or Effects of Chemical and Biological Events.

## JPM Guardian

- Strategic Vision
  - Be the Joint Guardian: Always present, never seen. A joint enabler preparing for the worst and poised to save lives and act decisively when the "unthinkable" occurs.
- Mission
  - Provide integrated capability to vigilantly protect our homeland, deployed forces and coalition partners, to enable rapid response, mission execution and restore our way of life.



# ATD Goals

- **Transatlantic Collaborative Biological Resiliency Demonstration (TaCBRD)**
- COCOM Sponsor: EUCOM
  - Develop and demonstrate a U.S. Government capability for resilience in countering a wide area biological incident (including contagious and persistent threats) that impacts U.S. and Partner Nation key civilian and military personnel and key infrastructure.
    - Wide area contagious biological threat, focus on morbidity through rapid detection and containment – thereby saving lives and enhancing recovery.
    - Wide area persistent biological threat, focus on planning, response and recovery activities that compress the timeline for recovery by at least 70% – thereby allowing a region to maintain long-term viability.
- **Geospatial Infectious Awareness (GIA)**
- COCOM Sponsor: AFRICOM
  - Demonstrate a Measurable improvements in time taken to detect, identify and respond to an unknown pathogen within a regional AOI. Start with an East African Country as a pathfinder testbed, timelines reduced from current 2 months to 7 days.
    - Pinpoint the location of an infectious outbreak within 24 hours of index case presentation;
    - Identify pathogen within 48 hours and produce a full genome sequence if necessary within 6 days;
    - Inform a coordinated response synchronous with pathogen location, identity and characteristics





# S&T Schedule



Fiscal Year ATD Title / COCOM Partner	FY11				FY12				FY13				FY14				FY15				FY16			
TaCBRD-1 / EUCOM																								
GIA / AFRICOM																								
BSV ATD / TBD																								

RDTE

PROC

MS



# S&T Funding (\$M)

## (FY12 President's Budget)



YEAR/ RTDE	FY12	FY13	FY14	FY15	FY16	TOTAL FY11-15
GIA FIT	6.45	12.63	11.10	0.0	0.0	30.18
6.4	3.92	4.75	8.46	9.07	9.07	35.29
TOTAL BUDGET	10.37	17.38	19.56	9.07	9.07	65.47





# S&T Business Opportunities



OPPORTUNITY	TIME-FRAME
<b>CB Defense Physical Science and Technology (Bi-annual) BAA</b>	
– For GIA and TaCBRD Projects	1QFY12
<b>CB Defense Small Business Innovation Research (SBIR)</b>	
– <a href="http://www.acq.osd.mil/sadbu/sbir/homepg.htm">http://www.acq.osd.mil/sadbu/sbir/homepg.htm</a>	
– For New Start Projects	Mid-Nov 2011





# S&T Point of Contact



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- **MAJ Tim Herd**
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# Rapid Reaction Tunnel Detection (R2TD)

Dr. Jason R. McKenna  
US Army Engineer R&D Center  
[Jason.R.McKenna@usace.army.mil](mailto:Jason.R.McKenna@usace.army.mil)







# Rapid Reaction Tunnel Detection (R2TD)

**NORAD-USNORTHCOM and DHS S&T Co-Sponsored Joint Capability Technology Demonstration (FY10-12)**

**Objective:** Affect an enduring capability to detect, classify, exploit, and remediate clandestine, purpose-built tunnels illegally entering the United States and on foreign battlefields.

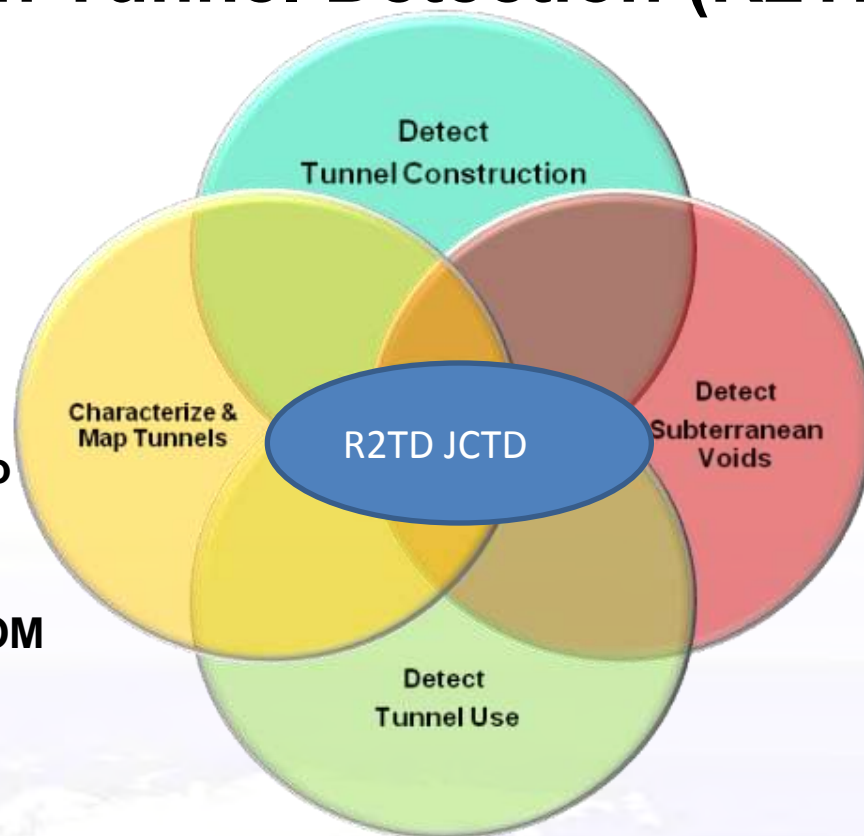
**Approach:** Deliver four sets of capabilities to the Warfighter (DoD) and Federal LEA (DHS/DOJ)

**Operational Manager:** US NORAD-NORTHCOM

**Technical Manager:** US Army Engineer Research and Development Center (ERDC)

**Transition Manager:** Joint Program Manager Guardian (JPMG)

**OSD Oversight:** Office of the Secretary of Defense (OSD)





### **Border Tunnel Activity Detection System (BTADS)**

- Seismic-Acoustic point and linear sensors
- Deep or Shallow Solution
- Surgical Solution or Wide-Area Solution

## **JCTD R2TD Residuals (Tunnel Detection Tool Box)**

### **Electromagnetic Induction Sensor (EMI)**

- Solution for conductor/infrastructure-rich targets

### **Active Seismic Imaging System (ASI)**

- Void Detection Solution
- Deep Imaging Solution

### **COTS IR Cameras (IR)**

- Image Spoils & Camouflaged Egress Points

### **MCOTS UGVs (TERRA)**

- Map and characterize tunnels in GPS-Denied Environments
- 8" borehole insertable UGV
- Egress point insertable UGV

### **Common-Operating Picture (COP)**

- Ties together active & passive sensors on ESRI/KML compliant map-display
- Archives Signatures & Historic Activity

The R2TD “system of systems” approach reduces risk by integrating & transitioning proven capability to the Warfighter and Law Enforcement Agent



# “A”-Kit

## BTADS-Point



TCM Back Plane  
housed in metal  
“TCM Enclosure”



Servers, Comms  
Gear, Data Storage



TCM

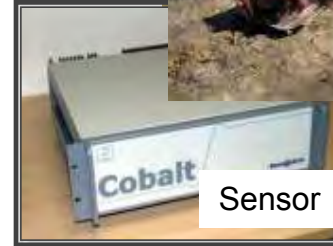
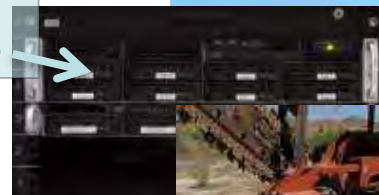


Geophone

## PTZ Cameras



Servers, Comms  
Gear, Data Storage



Sensor

## BTADS-Linear



Fiber-Optic Cable

## C2-Facility



**“A Kit” consists of small, medium and large sets  
based on perimeter size**





## “B”-Kit

### Electromagnetic Gradiometer



### Active Seismic Imaging



### Borehole Camera



### Unmanned Ground Vehicle



### Rapid Tunnel Remediation Module



**“B Kit” (regional mobility), one per region**



# CHEMICAL AND BIOLOGICAL PROTECTION





# Common Analytical Laboratory System (CALS) Overview



**Military**

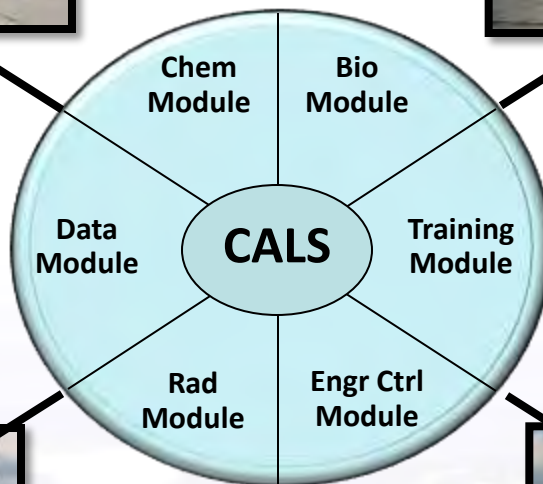
**Provide  
Common Core  
Modules Plus  
Unique User  
Capabilities**



**Semi-Fixed Site**

- Shared Acquisition, Development and Testing
- Common Logistics and Training
- Streamlined Sustainment

**Results in Cost Savings**



- Modular Approach
- Plug and Play
- Platform Independence

**Results in More  
Flexible Capabilities**



**Trailer**

- WMD Elimination / Interdiction
- Force Protection
- Sensitive Site Exploration
- Consequence Management
- Civil Support



**Commercial**

**Provide an Integrated Solution Using Common Core Capabilities**



# CALS Capabilities / Challenges



## Capabilities:

- CALS modules may be functionally or mission based depending on published Capability Development Document (CDD)
- Tailorable, modular systems where technology can be reconfigured to accommodate specific mission needs
- Identification and confirmatory testing, in support of analytical processes and operational needs, commensurate with the supported mission
- Commonality of equipment/capabilities across mission spectrum

## Challenges:

- Integrate with existing JPEO Family of Systems Information Systems
- Reduce the operators required skill level and training volume
- Meet CBRNE Survivability and EMI Standards
- Able to Operate CONUS / OCONUS
- Biotoxin Identification
- Forensics
- Non-Traditional Agents



# Commercial Off the Shelf Life Cycle Management Program (COTS LCMP)



## Mission:

The Commercial Off the Shelf life Cycle Management Program (LCMP) provides a single point of management for the Life Cycle Management of CBRNe COTS in support of the JPEO-CBD.



## COTS LCM Addresses:

- A COTS Procurement and Sustainment Process
- A Technology Roadmap Assessment (TRA)
- A Partnership with Industry
- An Equipment Performance Validation Process
- POR Support (Information Sharing) When Requested
- Institutionalization of CBRNe COTS Products
- Provide CBRNe COTS Annual Modernization Plan (CCAMP)
- Life Cycle Management Center Partnership with TACOM Rock Island



Strive to **Standardize, Modernize and Institutionalize** COTS equipment to optimize benefits/savings to the DOD



# COTS LCMP Capabilities / Challenges



The COTS Life Cycle Management Program (COTS LCMP):

## Capabilities:

- Focus on improving CBRN COTS capabilities
- Institutionalized Training and Tactics Techniques and Procedures (TTPs) Where Feasible
- Integrated Logistics and Sustainment Support
- Independent and Standardized Test and Evaluation
- Emphasis on Sharing Data and Information Across Community

## Challenges:

- Dispersed, Fragmented and inconsistent Product Data
- Industrial Obsolescence



# Unified Command Suite (UCS)



## Program Description

- The Unified Command Suite Increment 1 is a fully integrated mobile communications platform that is self-sufficient and highly interoperable by integrated commercial and military communication hardware.
- Provides communications interoperability with Federal, State, Local and Military Emergency Response elements at an incident scene.
- Provides reachback capability which allows Incident Commanders the ability to assess an incident scene, advise responders, and facilitate access to DOD information.

## Program Status



### Change III Upgrade:

- DSS Upgrade
- Down Range Repeater
  - Tactical Repeater
- Server Upgrade
  - Domain Interoperability
- UCS Radio Over Internet Protocol (RoIP) Test
- Data Information System (TDIS) Replacement

## The Future of the Program

- DOTLMPF Assessment completed April 2011
- Recommendation:
  - UCS and ADVON vehicles remain in their current configuration.
  - Joint Product Manager Consequence Management (JPdM CM) will continue to manage the program while the Army will take on the responsibility to resource it.

**Initial Design Completed. Completed Contract Actions.  
Working Toward Capstone Test and Fielding.**

**Unified Command Suite (UCS) is in a Clearer State of  
Transition**





# UCS Capabilities / Challenges



## Capabilities:

- Provides a Fully Integrated Mobile Communications Platform
- Is self-sufficient and highly Interoperable by Integrated Commercial and Military Communication Hardware
- Provides Communications interoperability with Federal, State, Local and Military Emergency Response elements at an Incident Scene
- Provides Reachback Capability to Emergency Response Incident Commanders and Analytical Laboratory System

## Challenges:

- Emerging standard, policies and requirements
- Mobility platforms





# Defense CBRN Response Force (DCRF)



- DOD directed transformation of CBRN Consequence Management Response capabilities to provide enhanced lifesaving capabilities NLT 01 OCT 11.
- JPMG is currently fielding equipment, providing training and sustainment based on the four validated ONS.
- Capabilities:
  - Search and extraction for personnel in a contaminated environment
  - Mass casualty, technical, personal effects and equipment decontamination
  - CBRN survey and hazards assessment
  - Personal protective equipment for medical personnel
- Challenges:
  - Ruggedization
  - Troop to task
  - Transportability



# FORCE PROTECTION



# Lighting Kit, Motion Detector (LKMD)



## Capabilities:

- Sensor-based early warning system.
- Provides alerts using passive infrared and microwave sensors on the Motion Sensor Module.
- Wireless Remote Control Module automatically receives silent or audible signal commands Light Modules to flood area with visible light (continuous or strobe) or infrared (IR) light.

## Special Features:

- 5-day mission life on a set of AA batteries
- Quick deployment (under 3 minutes to set up)
- Weight: 2.3kg ((6.5 lbs)
- Size: 20.32 cm x 27.94 cm x 11.43 cm
- Detection Range: 24.4 m
- Receive and Display alarm data from BAIS
- Waterproof
- Air Droppable

## Challenges:

- Size
- Weight
- Network capable
- Reliability
- Cost



# Emergency Management Modernization Program (EM2P)

## Description

- Single integrated acquisition program for the design, procurement, fielding, new equipment training, and life-cycle management of emergency management capabilities in support of the Army installations and their assigned Soldiers, civilians, contractors, and family members.

## Capabilities

- Common Operating Picture (COP) provides consistent, identical and relevant operational information shared by more than one command or jurisdiction and facilitates collaborative planning and operations and assists in achieving situational awareness across the Army.
- Mass Warning and Notification (MWN) capability consists of an interoperable family of systems providing near real-time information and instructions to personnel on an installation; in a building, area, site, or installation using intelligible voice communications, visible signals, text, data or graphics.
- Enhanced 911 (E911) provides the capability for dispatch center operators to automatically receive and utilize the telephone number and address of the caller to decrease overall emergency response times for data collection at the dispatch center and information transfer to first responders.







# EM2P Capabilities / Challenges



## **Capabilities:**

- Increases protection for Army Soldiers, Families and employees
- Synchronizes EM2P across the Army Enterprise
- Leverages centralized acquisition and fielding plan
- Finds efficiencies, reduces cost requirements through a single PM
- Leveraging existing resources and knowledge to startup EM2P

## **Challenges:**

- Integrating with disparate, previously fielded and unsupported MWN, COP and E911 equipment

## **Emerging:**

- EM2P contract expected to be awarded in FY13

# EMERGING PROTECTION



# Rapid Reaction Tunnel Detection (R2TD)

## JUONS CC-0466

### Requirement

- US Central Command requests tunnel detection capability to counter adversaries in Afghanistan from using purpose-built tunnels or existing subsurface infrastructure to circumvent tactical perimeter defenses
- US Forces Afghanistan (USFOR-A) and the International Security Assistance Force (ISAF) prioritized 14 sites for protection
- Requires 14 passive systems (A-kit), and 6 mobile detection systems (B-kit)
  - NORTHCOM validated operational utility of "A" kit in January 2011

### Production / Delivery Schedule

- Resources needed by OCT 12 to meet RDD
- From receipt of funding, the lead time is 9 months; includes manufacturing, shipping, installation, and training
- IOC is DEC 11 (1A/1B-kit); FOC is OCT 13 (14A/6B-kits)
- JCTD residuals were delivered to theater; 1 B-kit currently in use in support of U.S. Central Command Combined Joint Interagency Task Force 435

### Issues/Concerns

- IOC for integration with existing Force Protection systems via Integrated Base Defense software was 4 August 2011
- Equipping: AUG 11 thru OCT 13
- Sustainment: two-years Contractor Logistics Support sustainment included
- Manning: R2TD systems will be monitored by Base Defense Operations Center personnel; operated by Forward Operating Base Military Police and Engineers
- Training: Government Personnel and Contractor Field Service Representatives provided training and maintenance





# Entry Control Point/Non-Intrusive Inspection Systems (ECP/NIIS) - JUON CC-0315



ECP is a System of Systems that enables theater units to detect and classify VBIED or PBIED threats in time to neutralize, contain or destroy the threat as part of an integrated defense system before reaching intended targets. It identifies through Non-Intrusive Systems the presence of explosives, weapons and other contraband.

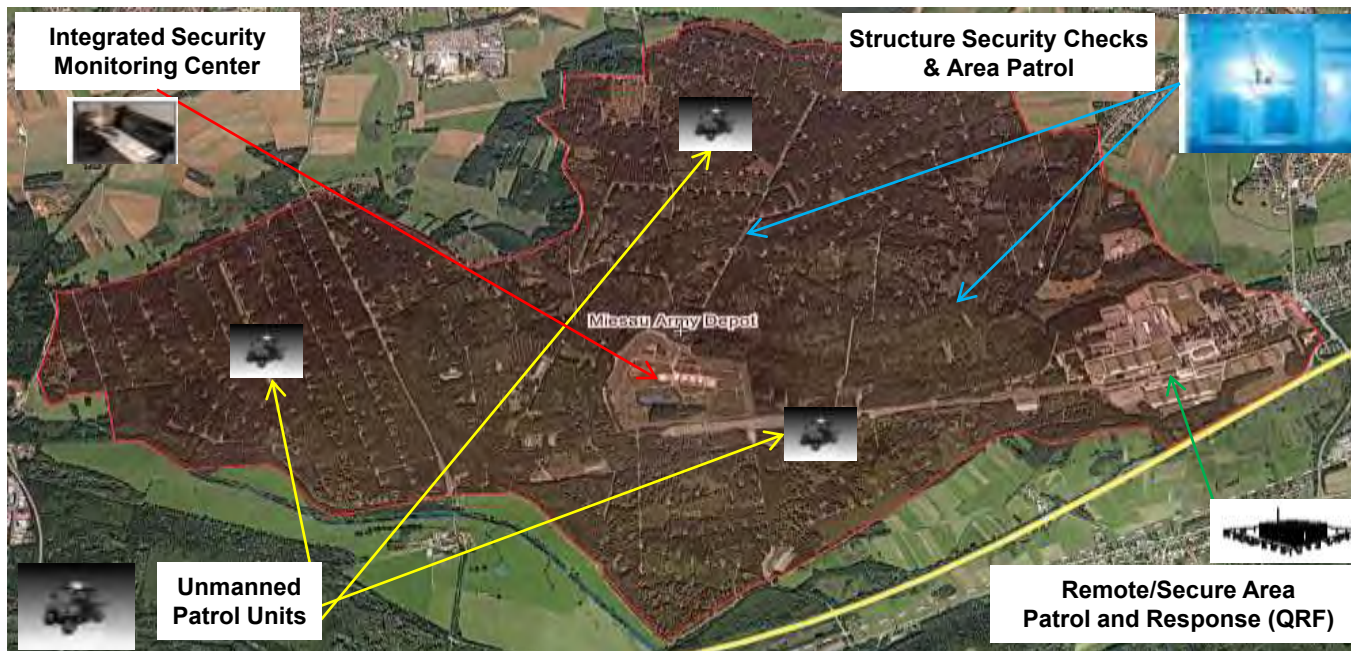
- All equipment has been deployed to theater with exception of remaining SIM Personnel Scanners, the 1 High Energy (HE) Trailer and the remaining 14 personnel scanners
- ECP-3 Omnibus contract awarded 23 Jun 2011
- Released the RFP for DO-2 on 21 Jul 11 – RFP was released to the seven ECP-3 awardees
- \$198M FY10 to support integration efforts
- \$77M FY11 to complete integration of ECP



*Protects Soldiers And Facilities With Minimum Manpower Requirements*



# Integrated Installation Robotics Surveillance Security (IIRSS)



## Capabilities:

Exploit advancements in

- position location in GPS denied situations
- obstacle detection & recognition
- control s/w modular architectures
- modular robotics appliqué technology
- dual use sensors to provide OD/OA for ANS & DOTM

**Overview:** Guard Force operational expenses are increasingly burdensome and affect the sustainment of installations. Overall contract security guard costs are approaching \$1B for IMCOM. IIRSS will deliver robotics system capable of performing manned guard force tasks and functions, such as: monitoring secured areas and gates, patrolling, performing intruder detection, and physical security tasks, while reducing cost.

- Year 1: Demonstrate Stand-Alone Robotic Capability
- Year 2: Integrate Robotics w/ Existing Security Assets

## Challenges:

- Apply current and emerging appliqué UGV technology to installation security and protection functions and tasks.
- Implement Integration and Automation of legacy Force Protection, Physical Security, Emergency Response and Consequence/Incident Management Systems at an Installation.





# JPM Guardian Technical Challenges



- Integration of CBRNE, physical security, force protection and emergency management capabilities into a interoperable network:
  - Integration of disparate technologies, networks and decision support tools
  - Sensor Data Fusion and Processing for Cueing/Tipping
- Identification of COTS that meet CONUS / OCONUS / AOR Operational Requirements
- Fusion, automation and integration of field analytical components



# JPM Guardian Technical Challenges



- Emergency Capability Requirements
  - Installation Base Defense: Integration of Installation Information Management capabilities (EM, AIE, ICIDS, Security Response) into a Common Operating Picture
- Integrated Tactical Force Protection System
  - Integration of threat detection, identification and potentially engagement systems
  - Scalable/tailorable to meet rapidly emerging operational requirements



# JPM Guardian Funding



\$M	FY12	FY13	FY14	FY15	FY16	FY17	TOTAL
<b>CBDP</b>							
RDT&E	23	17	5				45
Procurement	16	24	28	46	64	69	207
<b>Army</b>							
EM (OMA/Procurement)	57	63	69	18	18		225
FPS (Procurement)	91	45	47	29	27	24	263
<b>Total</b>	187	149	149	93	108	93	739





# JPM Guardian Business Opportunities



## CALS Program

Program	Description	Year
<b>CALS Technology Development</b>	Perform Module and Overall System Design. Evaluate Components and Execute Trade Off Studies. Equipment Procurement. Anticipated RFP Release – Jan 2011 – Cost Plus Fixed Fee	<b>FY11-FY12</b>
<b>Emergency Management Modernization Program (EM2P)</b>	Perform design, fielding and logistical support activities for emergency management equipment at US Army installations. Anticipated RFP Release – May 2012 – Firm Fixed Price	<b>FY13</b>
<b>Lighting Kit, Motion Detector (LKMD)</b>	Perform design, manufacturing, fielding and logistical support activities for LKMD to US Army units. Anticipated RFP Release – Nov 2012 – Firm Fixed Price	<b>FY12</b>





# Program Points of Contact



## Project Manager:

JPM-Guardian, COL Brett Barracclough

[brett.barracclough@jpeocbd.osd.mil](mailto:brett.barracclough@jpeocbd.osd.mil)

Mr. Don Buley, Deputy JPM-Guardian

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## Technical Managers:

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CDR Bernard Doctor, Technical Dir

[bernard.doctor@jpeocbd.osd.mil](mailto:bernard.doctor@jpeocbd.osd.mil)





# Joint Project Manager Transformational Medical Technologies Advanced Planning Briefing for Industry

September 7, 2011

*"Protecting the Warfighter and the Nation from Biothreats."*



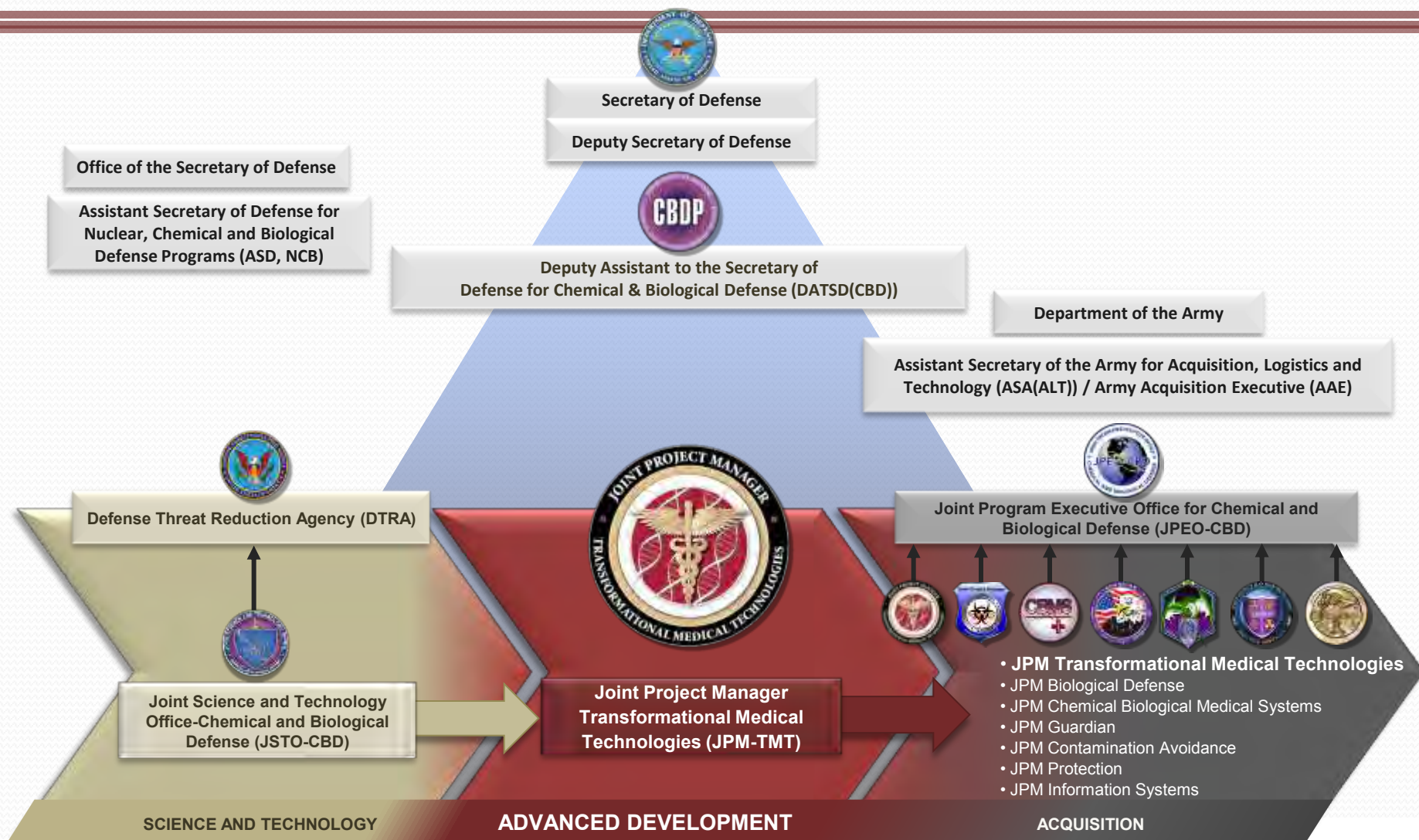
**MR. DAVID E. HOUGH**  
*Joint Project Manager, TMT*



## **JPM-TMT MISSION:**

***Provide the Warfighter and the nation with biosurveillance response capabilities and medical countermeasures to protect against emerging, genetically engineered or unknown biothreats.***

# JPM-TMT Organization





# JPM-TMT: A Vital Component to the Integrated National Biodefense Portfolio



## JPM-TMT

Broad spectrum solutions to the unknown biological threat and emerging infectious disease

- Broad-spectrum antivirals
- Broad-spectrum antibiotics
- Host-targeted therapeutics

## NATIONAL BIODEFENSE PORTFOLIO

### DoD-Unique

Prophylaxis (Vx) and Therapeutic (Rx):

- SEB
- Tularemia
- Hemorrhagic fevers
- Ricin
- Shigellosis
- Viral encephalopathies

Prophylaxis (Vx):

- Brucellosis
- Cholera
- Glanders
- Plague
- Q Fever
- Botulism
- Tularemia
- Typhus
- T2 mycotoxin



### Common to DoD and HHS



Therapeutic:

- Tularemia
- Botulism
- Junin
- Influenza

Prophylaxis and Therapeutic:

- Anthrax
- Hemorrhagic fevers
- Smallpox

### HHS-Unique

- Burkholderia sp. Rx
- Plague Rx
- Smallpox Vx for special populations







# JPM Viral Countermeasure Acquisition Program



**Program Objective:** Acquire an FDA-approved viral medical countermeasures (MCM) that is based on an adaptable platform technology to minimize the effects of Ebola and Marburg virus infection.

## Timeline:

FY09	FY10	FY11 – FY12	FY13	FY14	FY15	FY16	FY17 – FY18
IND	MS A	Phase I Clinical Trials	MS B	Pivotal Animal Efficacy	Phase II/III Expanded Human Safety Clinical Trials	NDA	FDA MS C Approval

## Current Effort:

- Phase 1 Clinical Trials in progress for Ebola and Marburg MCM

## Follow-on Efforts:

- Develop host immune enhancement viral countermeasure (FY 14 Initiation)
- Leverage platform technology against other Hemorrhagic Fever Viruses (HFV) in anticipation of HFV-like engineered biowarfare agents (BWA) (FY 17 Initiation )

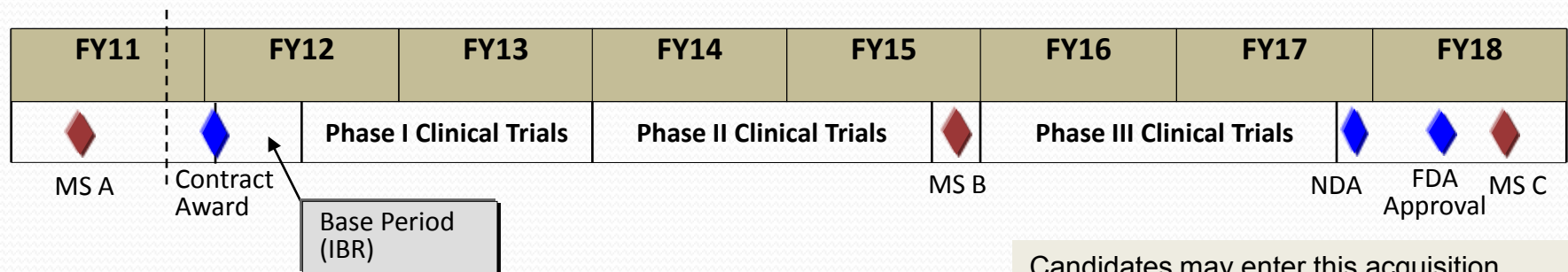


# JPM Emerging Infectious Diseases (EID) Countermeasure Acquisition Program



**Program Objective:** Acquire an FDA-approved EID MCM that is based on a rapidly adaptable platform technology and/or possess broad-spectrum efficacy against influenza, specifically including the H1N1 virus.

## Timeline:



## Current Effort:

- Source selection ongoing

## Follow-on Efforts:

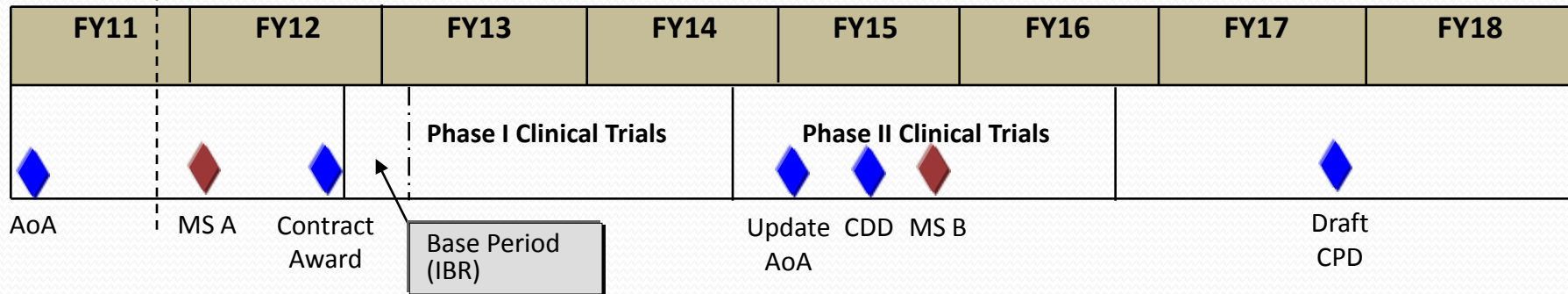
- Conduct an AoA at MS B to determine if new MCMs exist in the market place for potential inclusion in the EID program.
- Continue coordination with JSTO and industry for development of products for transition to advanced development for emerging infectious diseases.

# JPM Bacterial Countermeasure Acquisition Program



**Program Objective:** Obtain an FDA-approved broad-spectrum bacterial countermeasure (BS BCM) to combat the effects of bacterial infections and fill existing capability gaps to protect the Warfighter and the nation against biothreats.

## Timeline:



## Current Effort:

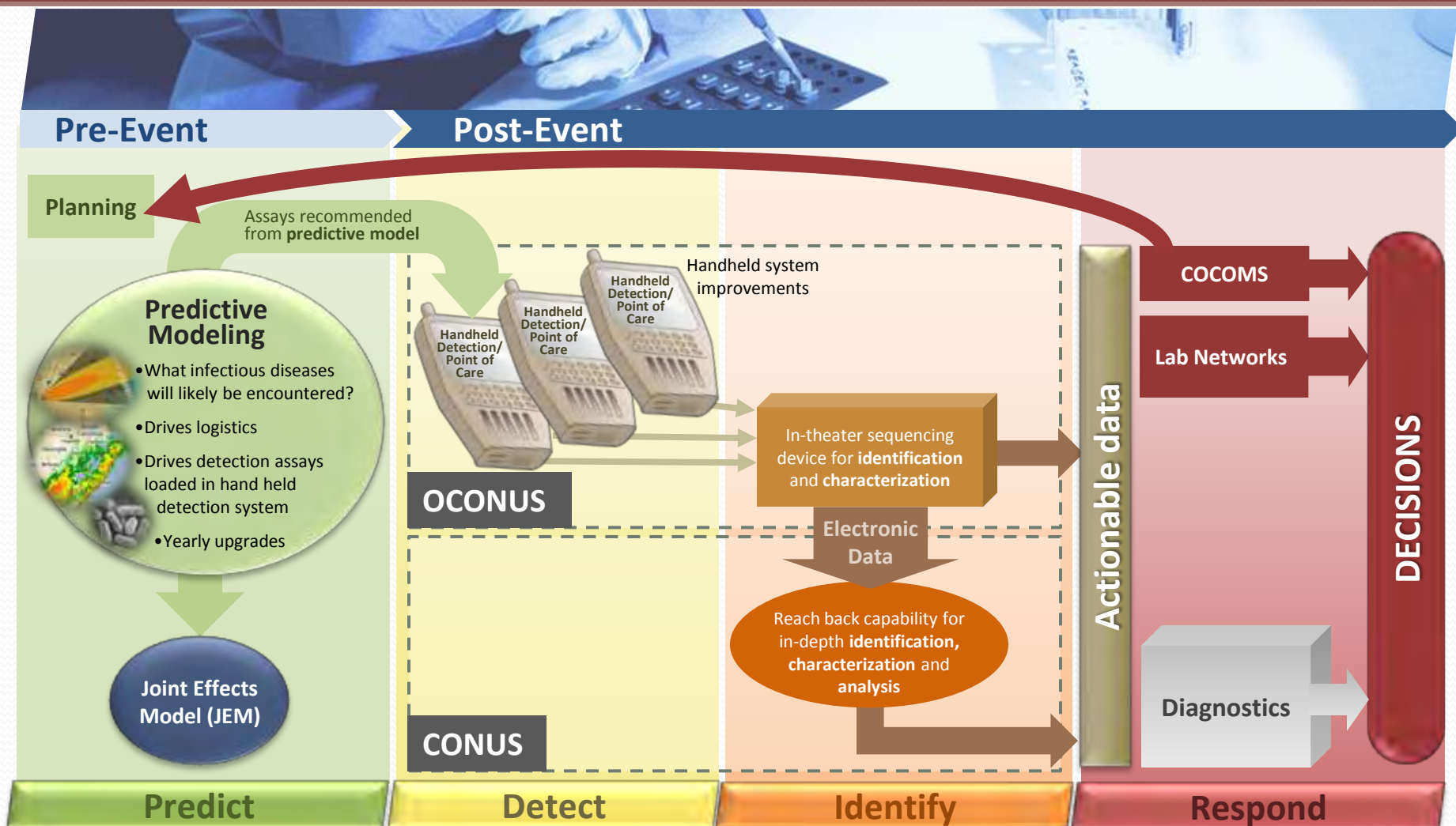
- Preparing for MS A review 1Q FY12.

## Follow-on Effort:

- Update AoA prior to MS B to determine if new MCM exist for inclusion in the program.



# JPM-TMT Biosurveillance & Response System







# JPM Biosurveillance & Response System Program



**Program Objective:** Integrate complimentary technologies to develop systems that predict, detect, identify and respond to emerging infectious diseases and novel biothreats.

## Timeline:

FY12	FY13	FY14	FY15	FY16	FY17	FY18	Beyond the POM
Prototype System Development 	Limited Objective Exercise 	COCOM Sponsored Exercise 	Field Increment 1 		Field Increment 2		
MDD	MS A	MS B					

## Current Efforts:

- Continue coordination with biological health and defense enterprise for the development of products that can be integrated into the biosurveillance and response system to counter emerging infectious diseases.
- Continue system improvement to increase system capabilities and reduce response time.

JPM-TMT programs are structured to ensure medical countermeasure (MCM) products and systems are **successfully developed and fielded to the Warfighter.**





create  
collaborate  
communicate



# CBA APBI BRIEFING

DEFENSE THREAT REDUCTION AGENCY

JOINT SCIENCE AND TECHNOLOGY OFFICE

CHEMICAL BIOLOGICAL DEFENSE

**Michael Smith, Ph.D., MPH**

Diagnostics and Disease Surveillance Division  
Defense Threat Reduction Agency (DTRA)

**Eric Van Gieson, Ph.D.**

Diagnostics and Disease Surveillance Division  
Defense Threat Reduction Agency (DTRA)

**Jerold Blutman, Ph.D.**

Diagnostics and Disease Surveillance Division  
Defense Threat Reduction Agency (DTRA)





# WHAT GUIDANCE IS DIFFERENT?

- ***Presidential and OSD / CBDP Guidance***, including:

***“We are launching a new initiative that will give us the capacity to respond faster and more effectively to bioterrorism or an infectious disease – a plan that will counter threats at home and strengthen public health abroad”***

***President Barack Obama***

***State of the Union Address on January 27, 2010***

***“Infectious diseases – either emerging or reemerging – must be a focus of the Department...”***

***Mr. Andy Weber***

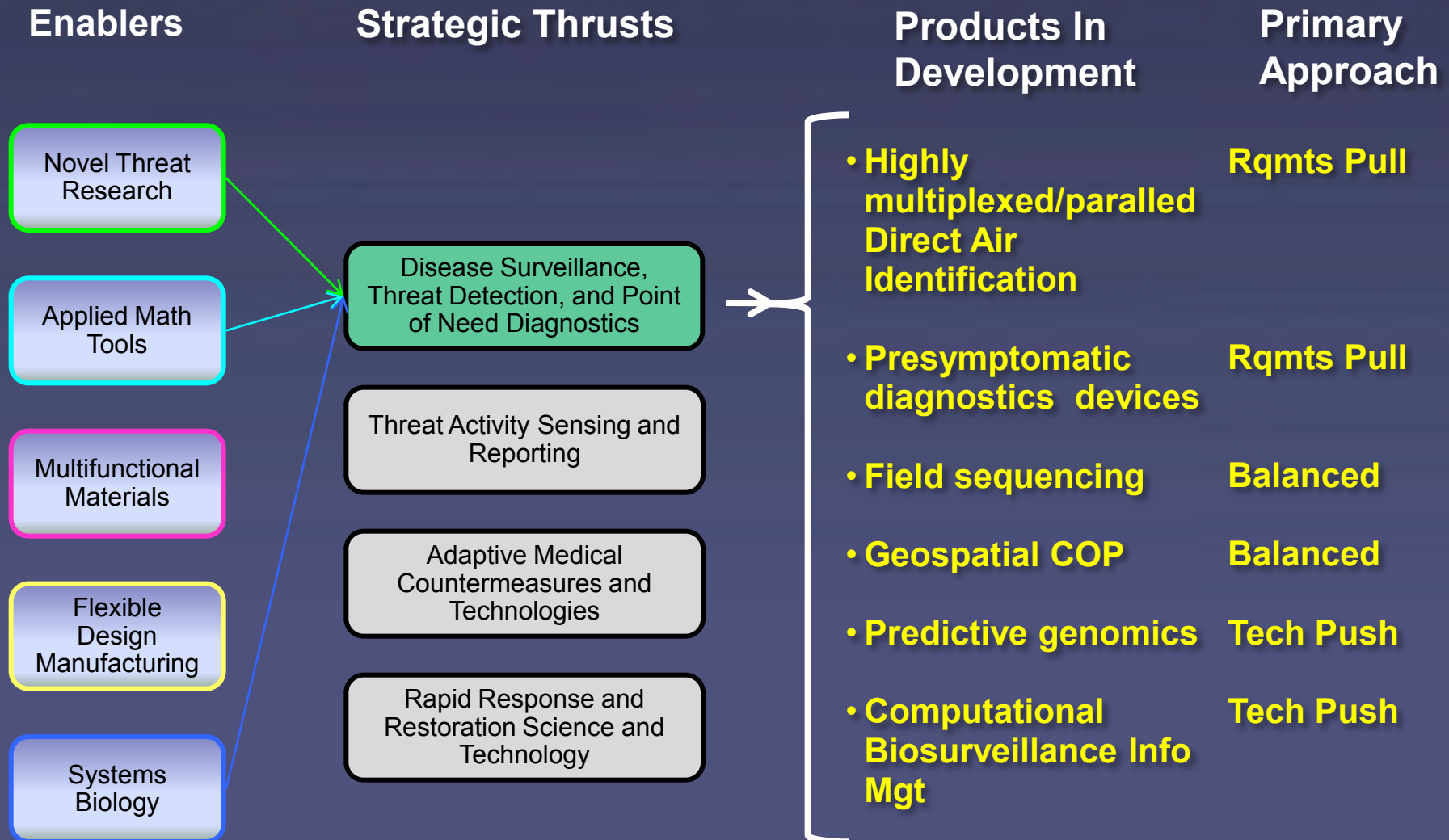
***CBDP FY 2012-2017 Program Strategy Guidance***







# A CLOSER LOOK: BIOSURVEILLANCE AND DIAGNOSTICS





# Disease Surveillance and Future Diagnostics

## CBRN

### AGENT/HOST TARGET IDENTIFICATION

Antibiotic  
Resistance  
Markers

Pre-symptomatic  
Biomarkers

Host  
Biomarkers

Pathogen ID

Bioinformatics

**High Content Data Backbone**

- Pathogen Sequences
- Host-Agent Dynamics Signatures
- Characterized Reagents

Diagnostic  
and Disease  
Targets

### ENABLING CAPABILITIES

Sample  
Prep &  
Preserve

Platform  
Technologies

Both Core  
Medical and  
TMT  
Contributions

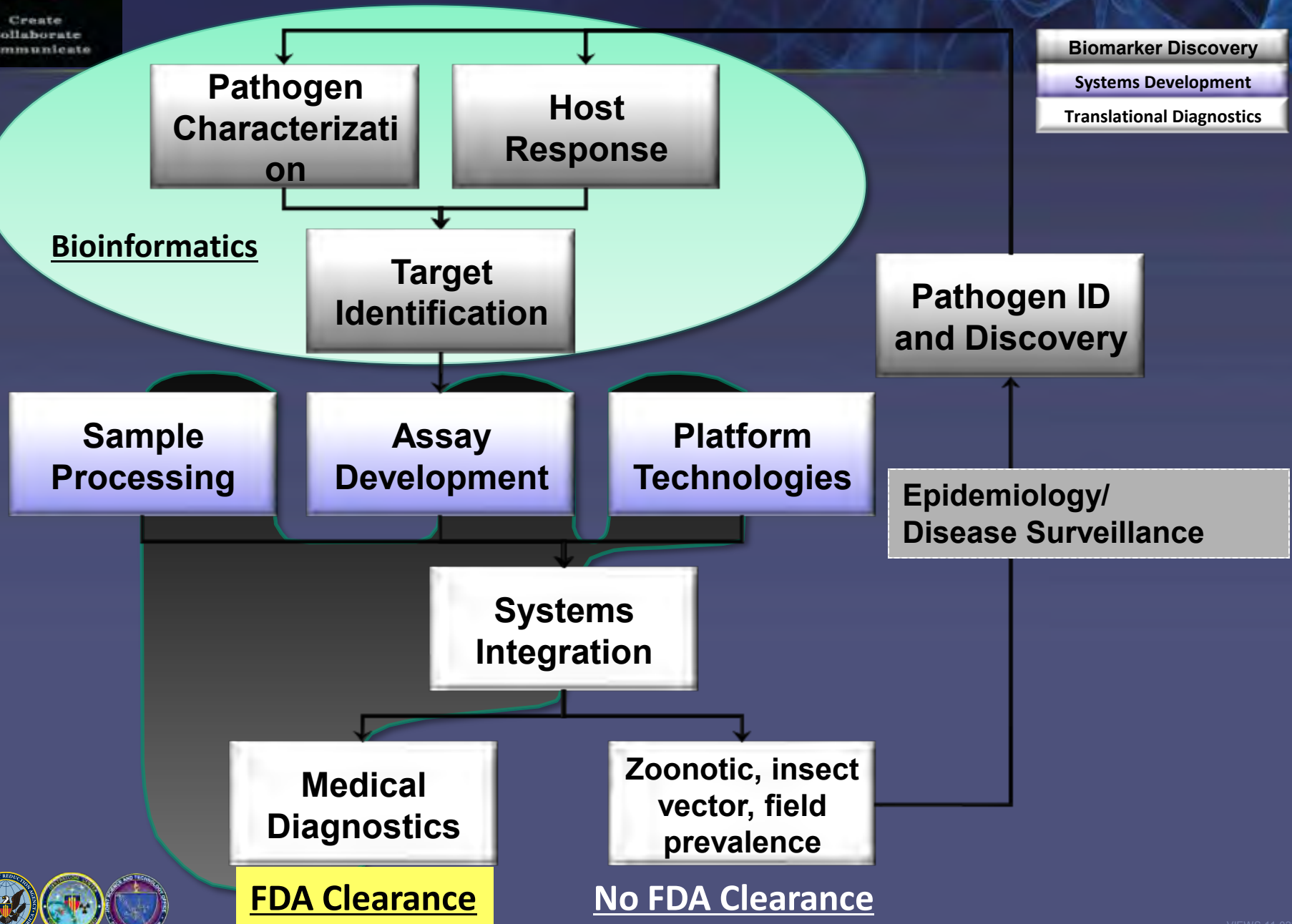
Engineering/Performance Drivers

Future  
Systems  
Development

- Enabled by informatics and device innovations
- Configurable for emerging threats



# Diagnostics and Disease Surveillance Division

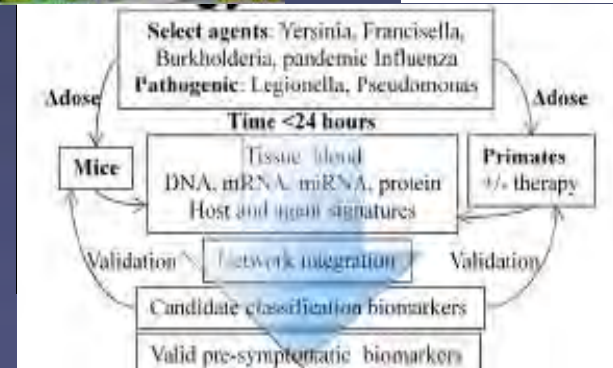
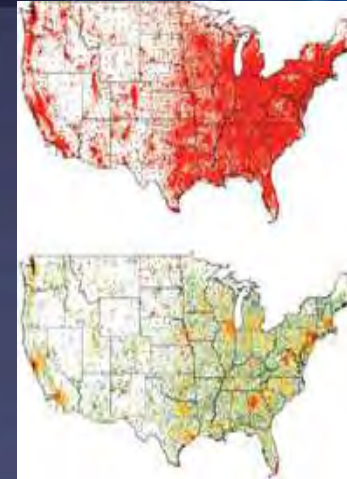
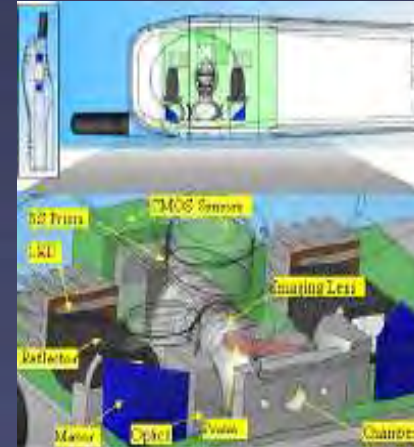






# Medical Diagnostics: Focus and Top-line Investments

- Providing high quality data closer to the point of need
- This area comprises:
  - Device innovation
  - Panels of biomarkers driven by bioinformatics
  - Epidemiological modeling tools
- Translational product development



## Endstate

- Recombinant antigen characterization pipeline delivered by FY12
- Minimum of two NGDS increment 2 candidate prototypes by FY15
- Verified panel of host biomarkers by FY15
- Decision support system incrementally delivered until FY17



# Strategic Enhancements of Diagnostic and Medical Surveillance capabilities

- **Biomarker strategy:**
  - **Current:** Support NGDS increment 1 to discover, develop, and verify full menu of class and agent-specific biomarker panels not addressed by the present CRP panels (eg. CCHF, RVFV)
    - Focused on proof-of principle for *host-based biomarkers*, world-class performers, sepsis model for clinical utility
  - **Future:** Support NGDS increment 2 with a broad development pipeline for host response (and agent) diagnostic targets enabled by an integrated bio-informatic backbone
    - Existing and emerging threat agent early diagnostic biomarkers through BM validation in clinical proxy animal models





# Medical Diagnostics: Milestones

**Near Term**  
**1-2 Years**

**Mid Term**  
**3-5 Years**

**Far Term**  
**5-10+ Years**

Agent characterization pipeline (Supports CALS/Field Analytics/NGDS Inc. 1)

Diagnostic Assay Development

Verified panels of biomarkers to support assay development for deployable diagnostic / detection systems and FDA approval

Diagnostic Point of Need Device (s)  
NGDS increment 2 candidate prototypes

Biosurveillance tools Disease Surveillance tools  
NGDS increment 2 candidate prototypes

Decision Support System

Incremental delivery of decision support capability for biological and medical analysis needs

Projects





# Transitional Diagnostics Thrust

- Systems Integration (system performance verification)
  - Standardized analytical studies to verify sample processing and assay performance on diagnostic platforms
  - Standardized animal studies to verify sample processing and assay performance on diagnostic platforms
- Medical Diagnostics
  - Pre-EUA submissions (with Advanced Development)
  - Transition multiple candidates to advanced developers, other customers
  - Pandemic/Epidemic Response
- Disease Surveillance – To Inform Dx System/Assay Development
  - **Prediction of Epidemic/Pandemic/Genetic Engineering**
    - **Vector assessment**
    - **Zoonotic surveillance**
    - **Epidemiological modeling**
  - Collection characterization





# Strategic Enhancements of Diagnostic and Medical Surveillance capabilities

- **Device Platform Strategy:**

- **Current:** Structured development process to support NGDS INC. 1 for significant device platform investment (consistent with Field Analytics ICD)
  - Established inter-governmental Technology Review Panel/ evaluation centers
  - Designed to enable NGDS INC. 1 to enter acquisition in FY13
- **Future:** Significant investment in development of multiple platforms to support NGDS INC. 2 with:
  - Down-selection methodology compliant with FDA Design Control Process
  - Incrementally add capabilities and assays via spiral development process
  - Alignment with early tech. developers (DARPA, industry) and with CBMS
- **FUTURE ACTIVITIES REQUIRE SIGNIFICANT ADDITIONAL INVESTMENT TO MEET NGDS SCHEDULE (Sp. INC. 2)**





# Strategic Enhancements of Diagnostic and Disease Surveillance capabilities

- **Disease Surveillance strategy :**
  - **Current:** Leverage Epidemiological surveillance and modeling to drive identification of emerging pathogens
    - Focused on standard threat list and strain-specific molecular and immunoassay development
  - **Future: Accrual,** characterization will lead to rapid/facile assay menu expansion and transition to advanced development



# Biosurveillance: Focus and Top-Line Investment



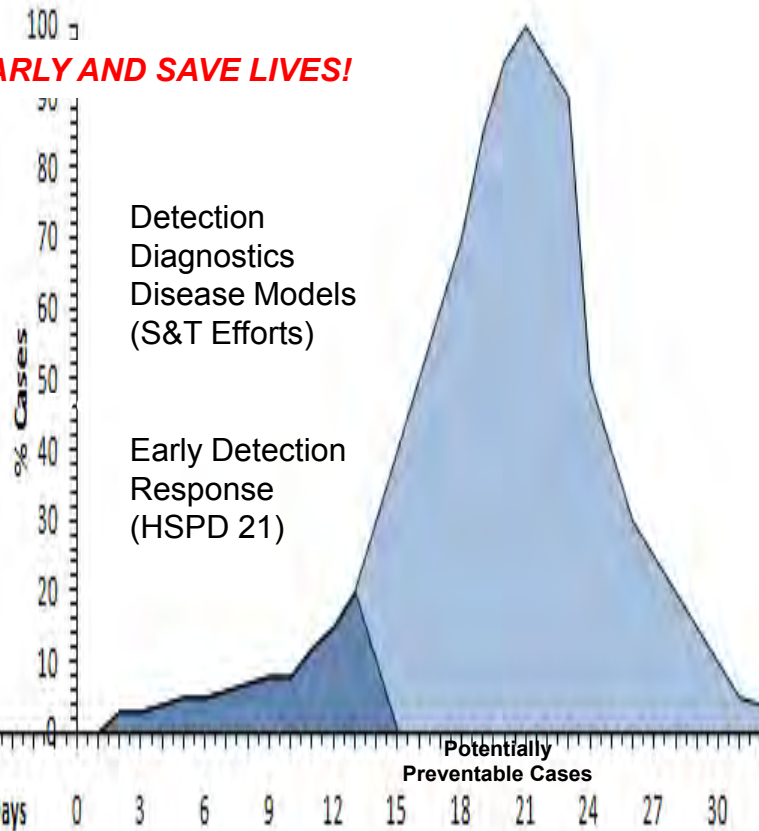
**WARN EARLY AND SAVE LIVES!**

Climatology  
Vector Ecology  
Animal Disease

Risk Prediction  
Threat Alert

Detection  
Diagnostics  
Disease Models  
(S&T Efforts)

Early Detection  
Response  
(HSPD 21)



## Biosurveillance Definition

*"The term **"biosurveillance"** means the process of data-gathering with appropriate analysis and interpretation of biosphere data that might relate to disease activity and threats to human or animal health – whether infectious, toxic, metabolic, or otherwise, and regardless of intentional or natural origin – in order to achieve **early warning** of health threats, **early detection** of health events, and overall **situational awareness** of disease activity."* (HSPD-21)

## BSV Requirements/ Gaps

- Gaps identified in DoD to PPD-2 Implementation Plan for National Strategy for Countering Biological Threats: 2011 Edition\*
- Joint Requirements Office
- COCOM Requirements

\*Adapted from Draft PPD-2 Implementation Plan for National Strategy for Countering Biological Threats: 2011 Edition

WHO Report 2007



FOR OFFICIAL USE ONLY





# Biosurveillance: Milestones

## Near Term 1-2 Years

## Mid Term 3-5 Years

## Far Term 5-10+ Years

### Diagnostics / Sample Preparation

Matrix interference, Signature Erosion, Target a-priori, Antibiotic Resistance, Interoperable

### Characterize Agent

Phenotype, Genotype, Persistence

### Detection

Field Sequencing for environment and human, Mobile Sensors, Dynamic Materials, Interoperable, Regulatory standards for safety & cleanliness

### Future Diagnostic

Human Response Biomarkers amenable to FDA

### 'Omics / Bioinformatics Reference Data Sets/Regulatory Science

Toxicokinetics/MCM design/Development/Manufacturing

### Computational Biosurveillance Information Management

Fusion & Analysis / Archival & Retrieval / Data Standards  
Determine most beneficial sources of data for surveillance and early warning

### Geospatial COP

Convert boundaries and population dynamics into disease recognition

### Ecosystem Studies / Disease Baseline

Identify populations at risk for epidemics due to climate events or other ecological changes that alter the dynamics of microbes, their environment or animal reservoirs and disease vectors

### Predictive Genomics

Environmental Species Jump: Understand Vector/Animal/Human Interface, Research microbial host-receptor interaction and determinants of pathogenesis

### M&S / Statistical Prediction / Early Warning Algorithms

Disease propagation, Human habituation, Medical resource consumption

Projects



# JPM-TMT Innovations and Successes



Innovations	Successes
Successful completion of <b><u>rapid-response integration exercises</u></b>	<ul style="list-style-type: none"> <li>• Bacterial and viral threats (18 days)</li> <li>• Dengue virus (11 days)</li> <li>• H1N1 pandemic (7 days)</li> </ul>
First U.S. government agency to invest in advanced development of promising platform-based therapeutic candidates to minimize the effects of Ebola and Marburg virus infection.	<ul style="list-style-type: none"> <li>• FDA approval and initiation of First-Time-in-Humans Clinical Trials for Ebola and Marburg therapeutics using platform technology</li> <li>• First-time implementation of Earned Value Management for development of therapeutic MCM against BWA</li> </ul>
Funded IND filing for a <b><u>broad-spectrum therapeutic candidate targeting influenza viruses</u></b> (including H1N1 and seasonal flu strains)	FDA-approved IND filing
First U.S. government agency to undergo the FDA's new animal model qualification process for recently filed initial data report on <b><u>non-human primate model of Ebola virus infection</u></b>	Qualified Animal Model available for product development (pending)

# JPM-TMT Funding Profile FY12-16

(Based on FY12 President's Budget)



Adv Dev \$K	FY12	FY13	FY14	FY15	FY16	TOTAL
<b>BA4</b>	\$83,569	\$79,823	\$86,173	\$83,736	\$77,210	\$410,511
<b>BA5</b>	\$20,062	\$36,449	\$85,627	\$117,735	\$99,493	\$359,366
<b>TOTAL</b>	<b>\$103,631</b>	<b>\$116,272</b>	<b>\$171,800</b>	<b>\$201,471</b>	<b>\$176,703</b>	<b>\$769,877</b>

BA4: Pre-Milestone B (aka MS B, Product Development Decision)

BA5: Post-Milestone B



# JPM-TMT Upcoming Business Opportunities

Opportunity	Estimated Release Date
Request for Proposal (RFP) for development of broad-spectrum medical countermeasures effective against six primary bacterial pathogens (anthrax, plague, brucellosis, tularemia, glanders, and melioidosis), near neighbors and unknowns.	FY12
Market Survey for platform-based medical countermeasures against hemorrhagic fever viruses (HFV).	FY12
Broad Agency Announcement (BAA) for development and demonstration of predictive modeling technologies and fieldable biological detection devices to better anticipate and respond to naturally occurring disease outbreaks and biowarfare agents.	FY12
<b>JPM-TMT 2012 Partnership Symposium</b> to address program Grand Challenges	<b>May 22-24, 2012</b>

JPM-TMT solicits proposals primarily through the Federal Business Opportunities (FBO) website. For up-to-date business opportunities, visit [www.fbo.gov](http://www.fbo.gov) or [www.jpmtmt.mil](http://www.jpmtmt.mil).

# From Surveillance to Solution: *Providing Response to Biothreats and Emerging Infectious Diseases*



## JPM-TMT Grand Challenges

**Integrate complimentary technologies to develop systems that predict, detect, identify and respond to biothreats.**

**Deliver broad-spectrum solutions that are agnostic to the threat.**





# Save the Date!

Visit us online: <http://www.jpmtmt.mil>



## JPM-TMT 2012 Partnership Symposium

May 22 – 24, 2012

Manchester Grand Hyatt | San Diego, CA



*Photo Courtesy of [www.navy.mil](http://www.navy.mil)*

**JPM-TMT partners** with other government agencies and laboratories, industry, and academia to facilitate the **advanced development and acquisition of broad-spectrum medical products and systems** to enhance our nation's response capability to biothreats and emerging infectious diseases.

create  
collaborate  
communicate



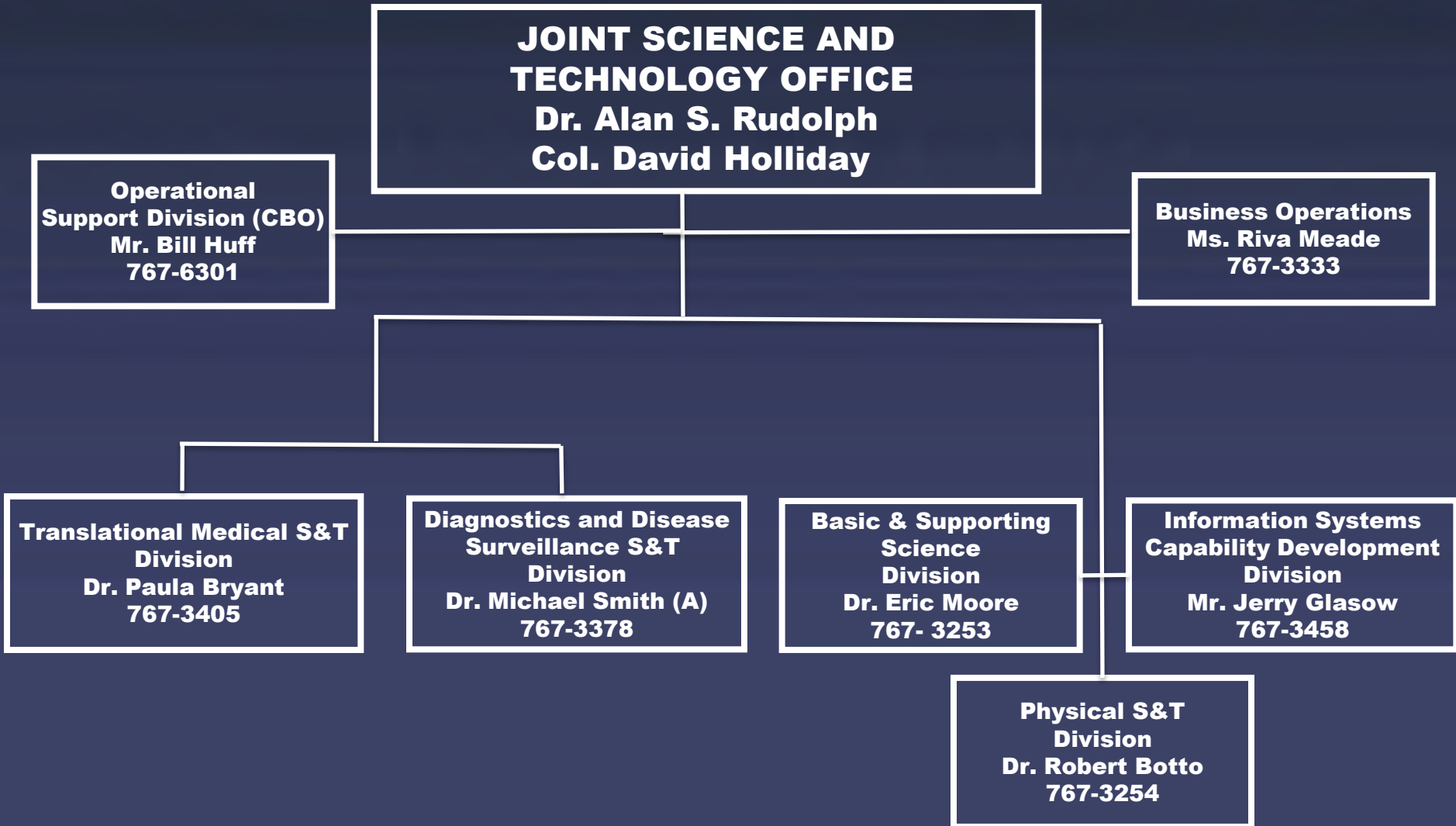
“Investing in  
transformational  
ideas, innovative  
people, and  
actionable  
technology  
development for  
Chemical Biological  
Defense solutions”

CHEMICAL AND BIOLOGICAL TECHNOLOGIES DIRECTORATE  
AGENCY

DEFENSE THREAT REDUCTION



# CHEMICAL AND BIOLOGICAL TECHNOLOGIES DIRECTORATE



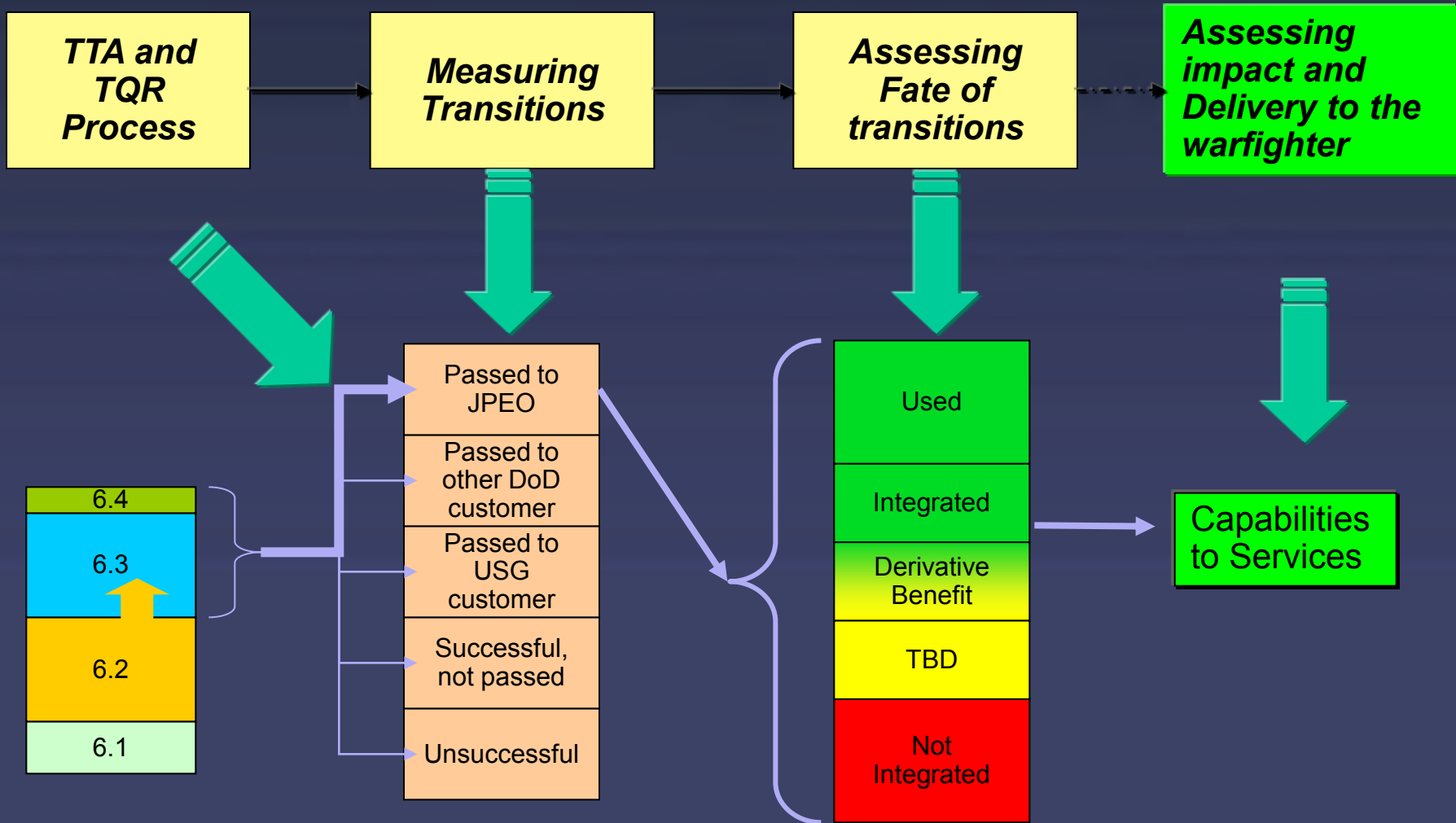
# Senior Leadership Call For Change

- *Identify and develop strategic capability thrust areas and use best practices and ideas that create a robust pipeline of capabilities and products*
- *Establish new organizational focus on Translational Medical and Disease Surveillance and Point of Need Dx*



# The Challenge: Populate the Pipeline with Robust Innovations from The Tech Base

*An evolving shift in focus:*





# How We Are Addressing The Challenge

- **Establish S&T Imperatives** that emphasize urgency and accountability surrounding knowledge creation and translation into robust pipeline of CBRN capabilities and products
- **Create Organizational Changes For Sourcing and Managing Innovation**
  - Managing to Strategy v. Managing to Budget
  - Sourcing new Investments through Poractive Scouting and Competition
  - Managing investments to Milestones and Ceasing unproductive investments
  - Focusing investments into critical mass programs – Focused Innovative Technology Programs (FITs)
  - Measuring performance of knowledge products and holding ourselves accountable



# S&T Imperatives

- Avoid surprise from fast moving field (s) and widening dynamic threats
- Be proactive in seeking the best ideas and practices in both S&T and business activities
- Aggressively focus on key critical areas of need and delivery of capability and products for development
- Openly innovate with DoD labs, academia, industry
- Recognize that speed matters, we will save lives
- Create translational teaming enterprise to enhance actionable technology and optimize transition
- Create an ecosystem of innovation and constructive challenge

# Sourcing Innovation Through Strategic Emerging Discoveries and Focused Innovative Technology Programs

- Strategic Exploratory and Emerging Discoveries (SEED) investments (\$100K-500K) are used to prime FIT programs and create core knowledge foundation
- Focused Innovative Technology programs (FIT)
  - STMs and DoD labs prospect and develop FIT ideas
  - STMs pitch programmatic challenge problem and proposed solution set to JSTO Board
  - Resourcing commensurate with innovation and impact (\$MM/3-7Yrs)
  - Decisions will result in focused BAAs soliciting open innovative consortia and building a community focused on challenge problem and set of define goals and metrics
  - Translational team with CBDP enterprise created from program inception to establish rigor and manage program milestones and transitions



# WIDE AREA ANTHRAX SPORE DECONTAMINATION



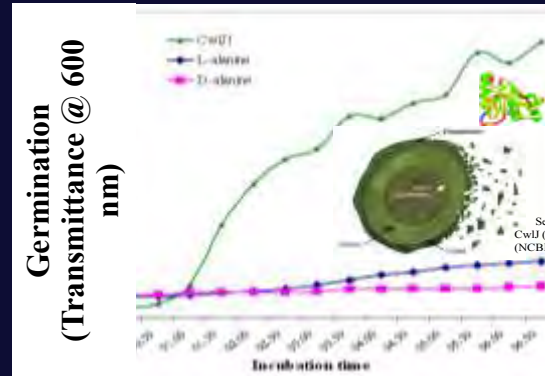
- ***B. anthracis* is virulent, persistent, and resistant to decontamination**

- Spores a threat for decades
- Current decontaminants corrosive or hazardous
- Large volumes of decontaminant needed

- **Seeking Innovative approaches to mitigate the effects of wide area dissemination of *B. anthracis* spores**

- Fast-acting and robust
- Low-cost
- Logistically acceptable
- Long shelf & pot life
- Environmentally-friendly

## Breakthroughs will be leveraged for new innovative solutions



CwlJ1 germination enzyme germination of *B. Cereus* spores faster than L-Alanine

- **Restorational Decon < 2 weeks**
- **4-6 log reduction of spores**

- **Improved Logistics**
- **6+ hour pot life (if applicable)**
- **3+ year shelf life**



- **Tarmac, buildings, soil, veg**
- **Min environmental impact**



# ADAPTING A RIGOROUS PROCESS OF RANKING AND CULLING THE PORTFOLIO

- Measures of **Impact** and **Feasibility** used to assess every effort
- Accounts for priority threats & gaps in existing countermeasures
- Enables **objective balancing** of projects to ensure a focus on translational, product-focused S&T
- Fundamentals
  - Veracity of input
  - Expert evaluation
  - Independent evaluation
  - Periodic adjudication
  - Transparency

## Criterion for Prioritization of Programs (V2, updated March 24, 2011)

### Impact

#### Medical efficacy

4. Substantial efficacy, PK/PD guided, in qualified models
3. Modest efficacy that still provides value
2. Limited efficacy by preliminary data
1. To be determined

#### Safety

4. No safety/tolerability issues
3. Acceptable safety/tolerability issues
2. Emerging/potential significant safety/tolerability issues
1. To be determined

#### Administration route/Deployment Facility

4. Oral and/or available in front line, echelon 1+, civilian hospitals
3. IM/SC or inhalation (1 dose), echelon 1+, civilian hospitals
2. IV/IM (>1 dose) or inhalation, echelon 1+, civilian hospitals
1. To be determined

#### Innovative, new MOA, broad application, superior to SOC

4. Clearly superior to any registered MCM
3. Equivalent in efficacy to SOC, but superior in safety/tolerability
2. Only minor advantages expected
1. To be determined

#### Knowledge generation

3. Highly potential/reputable performer i.e. publication, patents etc.
2. High risk/validation incomplete, potential for advancing scientific understanding
1. Very high risk, questionable past performance of performer

### Feasibility

#### Validated assay

4. Conforms with all validation parameters including GLP (see Dx Biomarkers Technical Review attached)
3. Pre-validation, assay likely to be validated
2. Assay acceptable for research purposes only
1. To be determined

#### Animal models

3. Acceptable animal model with high congruency to the human disease/condition
2. Animal models available/useful, but of limited congruency to humans
1. No animal models available

#### Time line

3. Probable IND/IDE filing in <24 months
2. Possible filing of IND/IDE in 24-48 months
1. No IND/IDE filing expected within the next 48 months

#### Manufacturing, formulation, stability

4. Adaptive/flexible, broad platform, no issues (including GLP/GMP)
3. Some unknown or unresolved issues
2. Significant issues with no clear solution in sight
1. To be determined

#### Regulatory

3. No regulatory issues foreseen
2. Potential hurdles (animal rule)
1. Clear unresolved issues





# Portfolio Management Tools to Make Key Investment Decisions



# Key Questions That Drive Decisions on New Innovations and Investment Decisions

- What is the vision and how does it relate to JSTO strategy and CBDP mission?
- How is it done today, and what are the limits of current practice?
- What's new in the approach and why will it will be successful?
- If successful, who will care? What difference will it make?
- What are the risks (technological, other) and the payoffs?
- How much will it cost? Over what time?
- What is the needed team composition for managing (CBDP) and executing (industry, academia, gov't) success?
- What are the midterm and final milestones and go-no go decision points to assess progress and success?



# The Focus Imperative: Translating Enablers and Thrusts into Prototype Products

## Enablers

Novel Threat Research  
Applied Math Tools  
Multifunctional Materials  
Flexible Design & Manufacturing  
Systems Biology

## Strategic Thrusts



## “JSTO Inside” Products

Host/Pathogen-Based Point of Need Diagnostics

Broad Spectrum Therapeutics

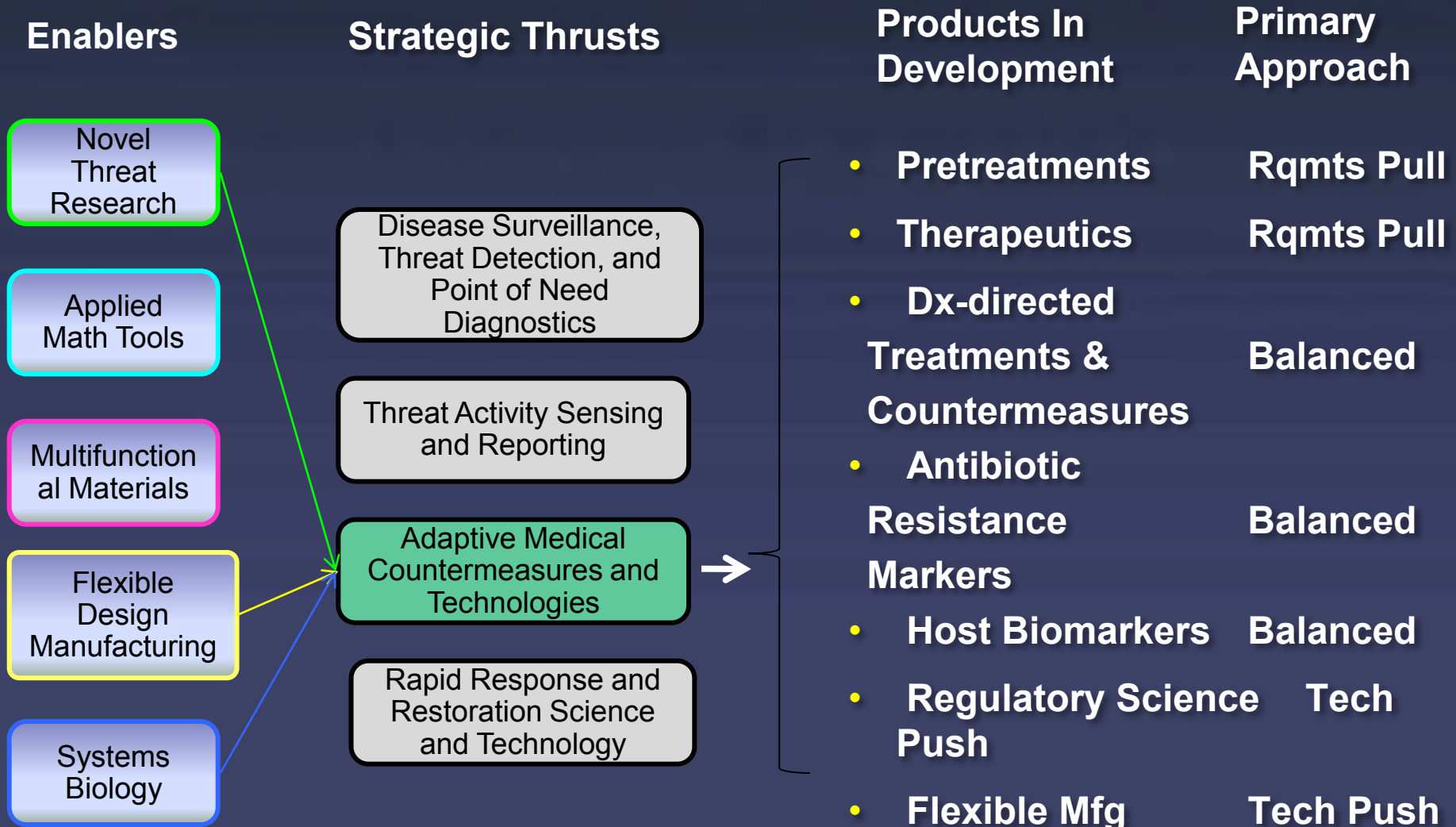
Advanced Decon/Coupled Sensing

New Sensors and Surveillance Tools

Flexible Manufacturing (Reagents/Therapeutics)

- Disease Surveillance, Threat Detection and Point of Need Diagnostics
  - Threat Activity Sensing and Reporting
- Adaptive Medical Countermeasures and Technologies
- Rapid Response and Restoration Science and Technology

# A Closer Look: Adaptive Medical Countermeasures and Technologies





# Strategic Thrust: Disease Surveillance, Rapid Threat Detection, and Point of Need Diagnostics

## AGENT/HOST TARGET IDENTIFICATION

Antibiotic  
Resistance  
Markers

Pre-symptomatic  
Biomarkers

Host  
Biomarkers

Rapid  
Pathogen ID

Bioinformatics

High Content Data Backbone

- Pathogen Sequences
- Host-Agent Dynamics Signatures
- Characterized Reagents

Diagnostic  
and Disease  
Targets

## ENABLING CAPABILITIES

Sample  
Prep &  
Preserve

Platform  
Technologies

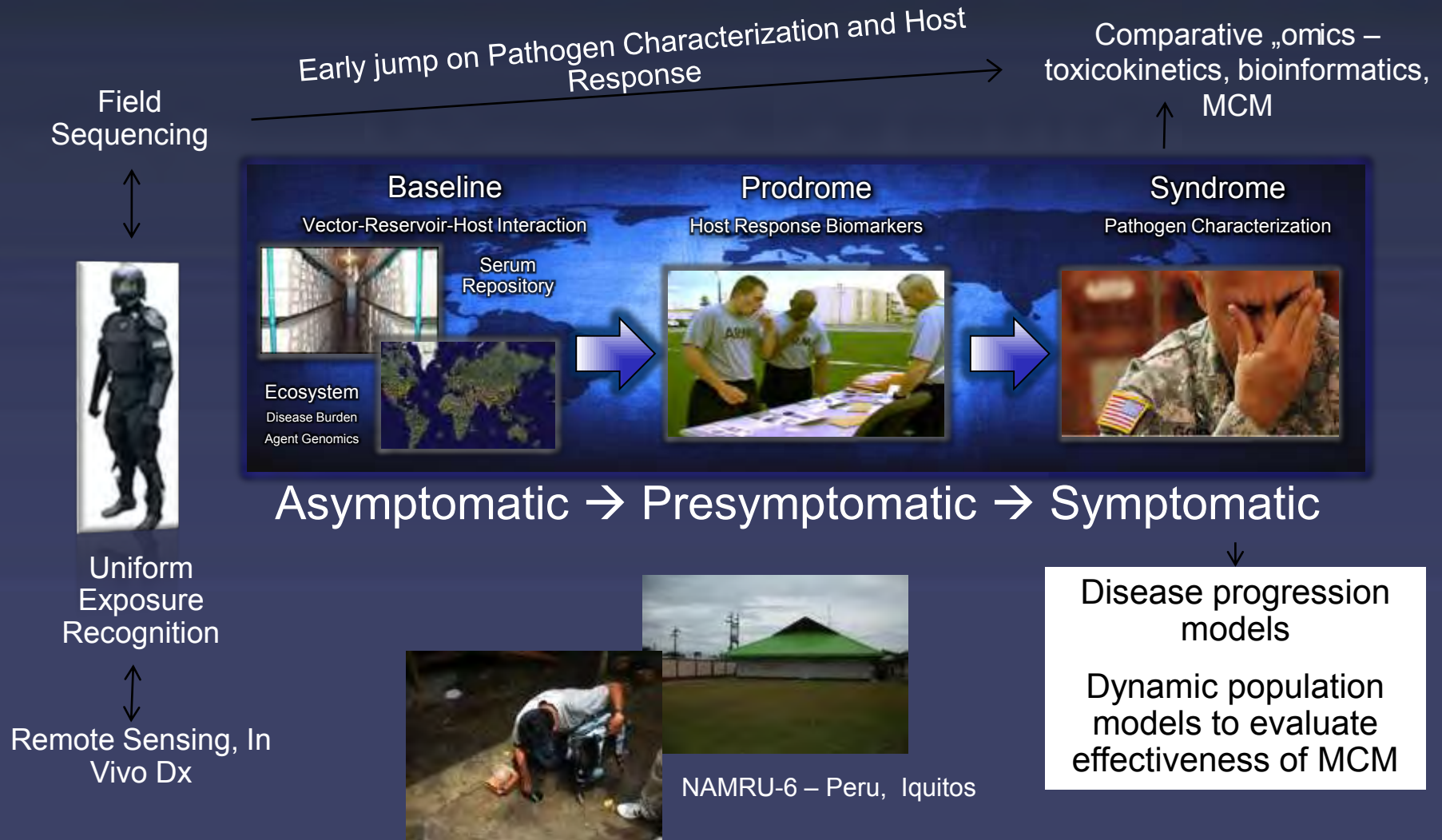
Engineering/Performance Drivers

## Future Systems Development

- Enabled by informatics and device innovations
- Configurable for emerging threats

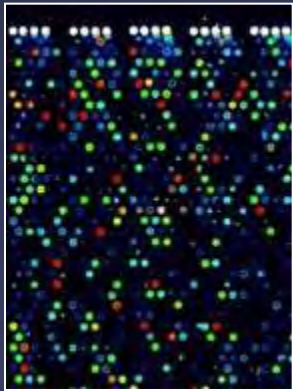


# Diagnostics in DoD Context



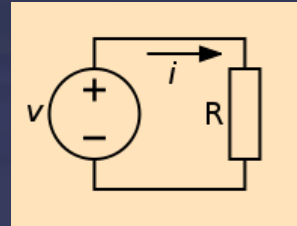
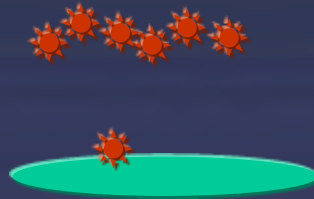
# Diagnostic Trends

## Shared Datasets and Networked Informatics



Measurement of many events simultaneously, yielding high-content information

## Miniaturized and Multiplexed Assays



Development of “nano-scale” electronic assays that occur in seconds, and require minimal inexpensive reagents

## Handheld Devices



Improvements in detection hardware to enable “point of need” data collection, diagnosis

Desired End State: Ease of Use, Interoperability, Standardization and Regulation of Hardware and Software Systems

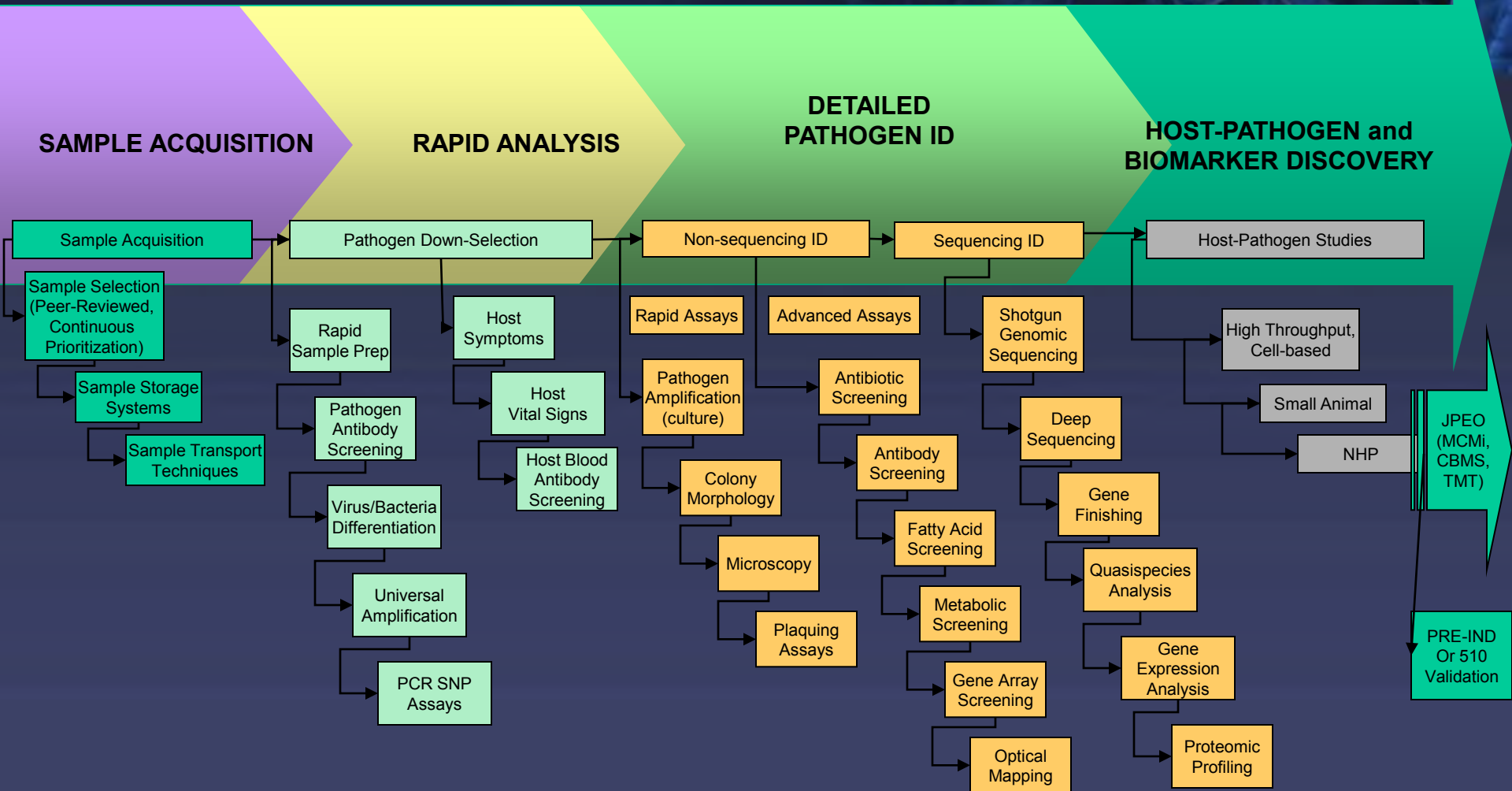


# New Diagnostics Initiatives

- Pursue high clinical value affordable point of need diagnostic platforms
- Create a “pipeline of discovery” to identify both host and pathogen biomarkers to enable effective Dx and potentially Tx capabilities
  - Identify rational targets for opportune host-based diagnostics
  - Establish sensitivity needs for future platforms
- **Mid Term** – Host-Based biomarkers on existing platforms originally enabled for pathogen targets
- **Long Term** – Develop a platform capable of both discovery of host biomarkers and performing diagnostics across a number of host targets
- Exploit personalized medicine and companion Dx to drive efficient Rx application.



# Dx Operational Activities

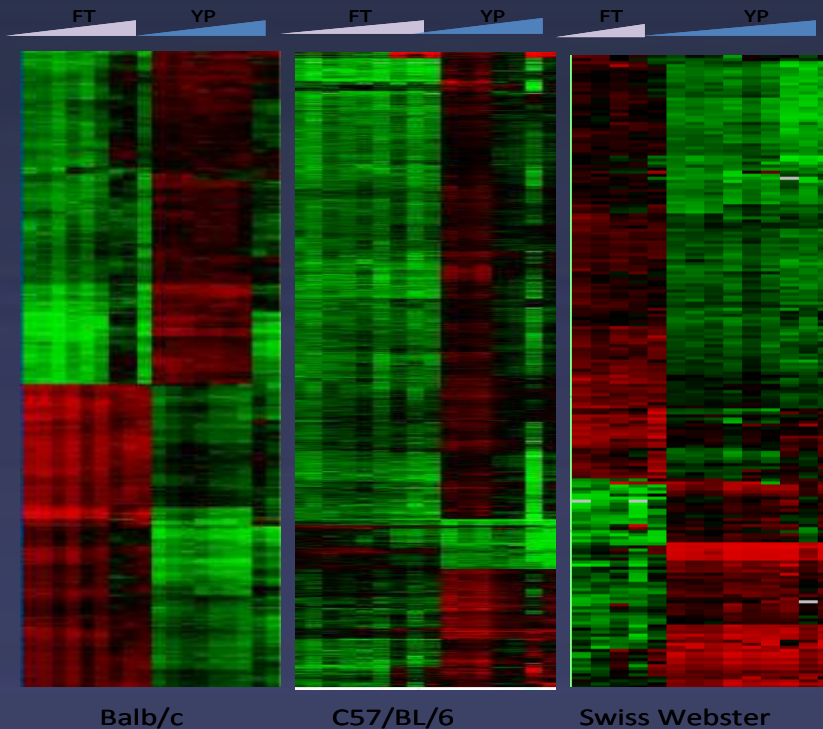


Data Management

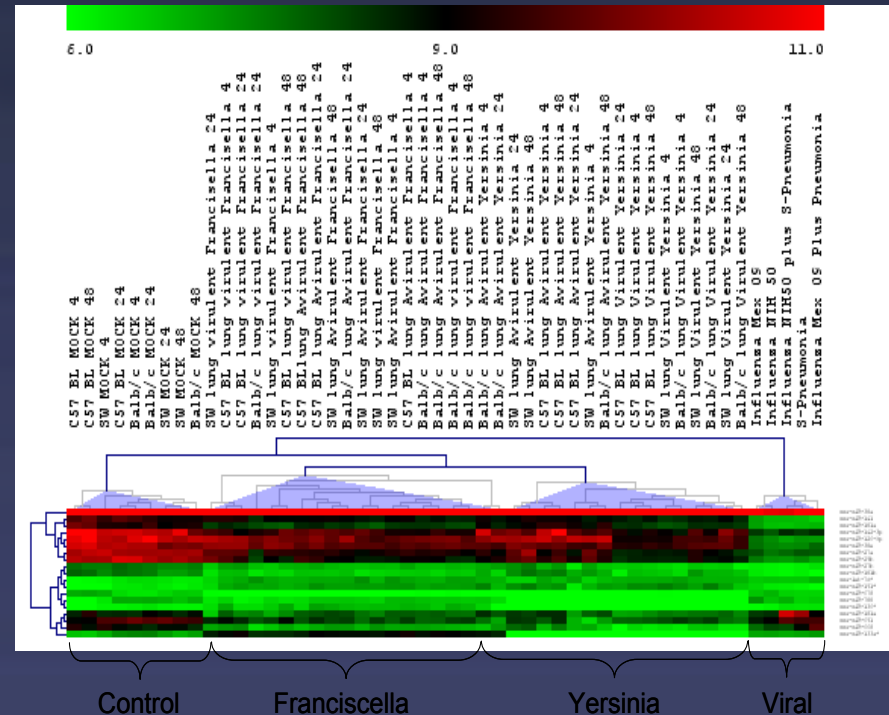


# Host Response Expression Profiling Reveals Unique Signatures of Pathogen Exposure

Mouse Lung Expression Profile



Mouse Lung Micro-RNA



Institute of Systems Biology

Moving to Proteomic Profiling of Host Immune Response  
In Organ and Plasma Specific Studies





# Sample Preparation

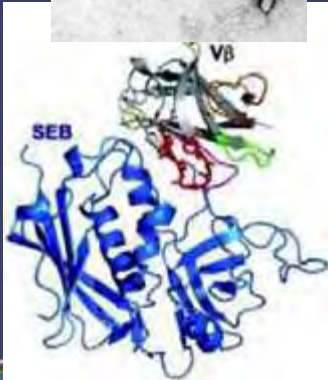
## Project Objectives

- Develop processes amenable to automation
- Reduce amount of clutter in samples
- Enrichment sample for specific targets
- Prototype different technologies to assess best candidate for each application

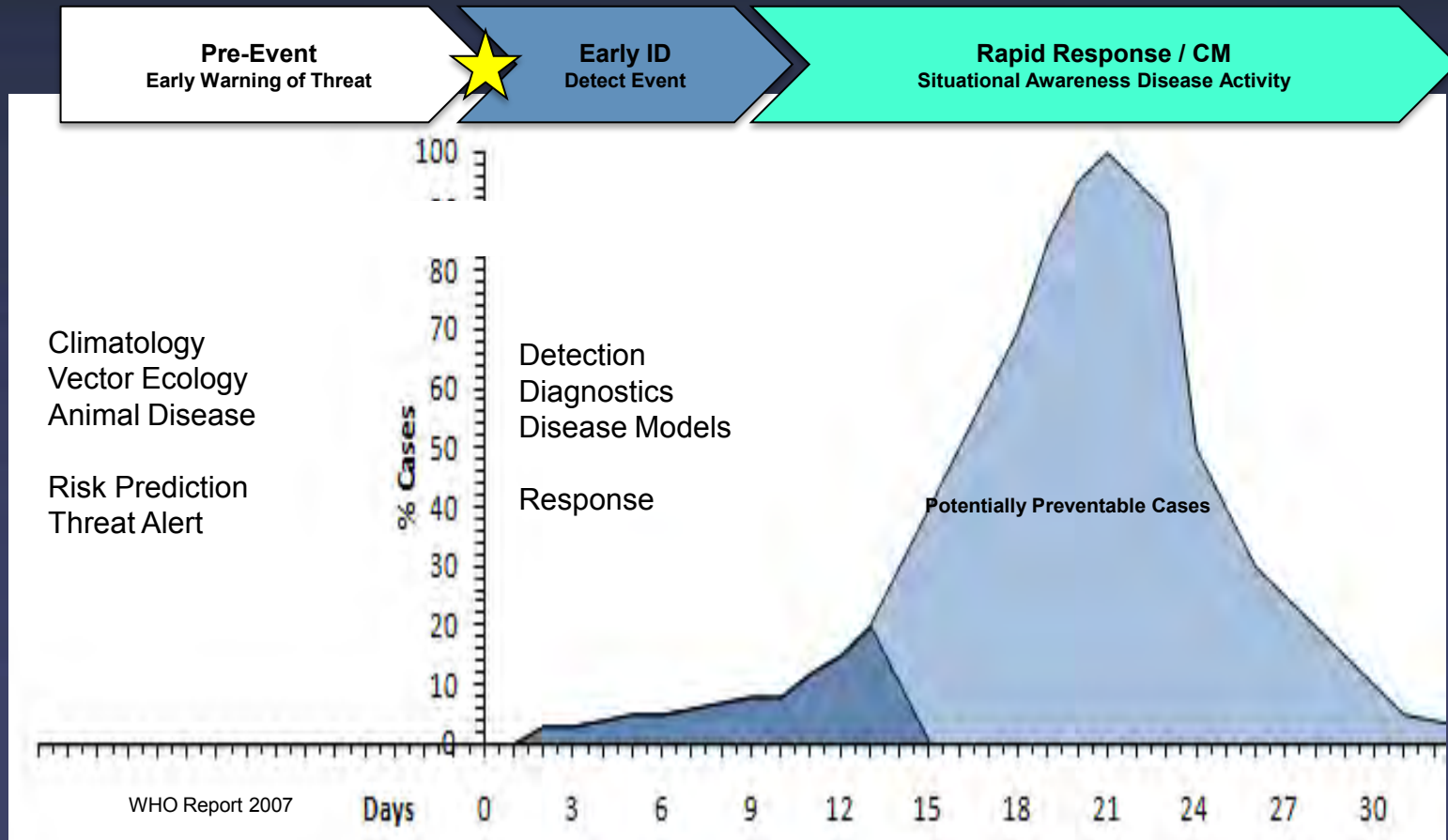


## Update

- Scheduled outcome:
  - Initial Demo scheduled for 3Q and 4QFY12
  - Design criteria for sample prep module 4QFY12
- Additional technologies are of interest for consideration

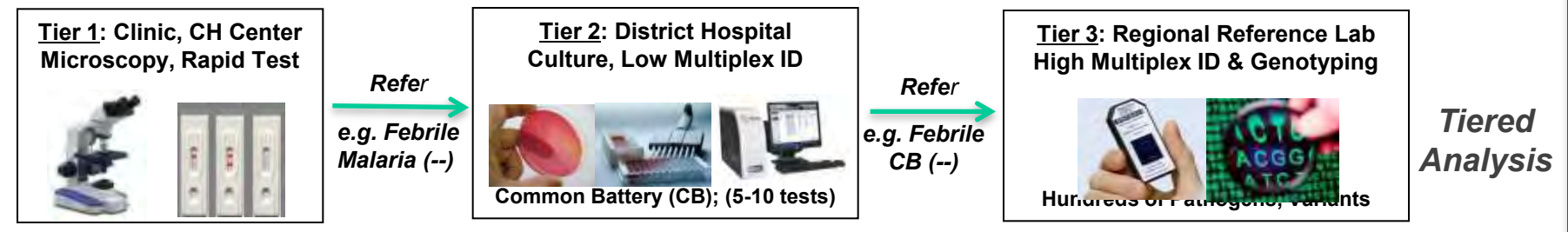
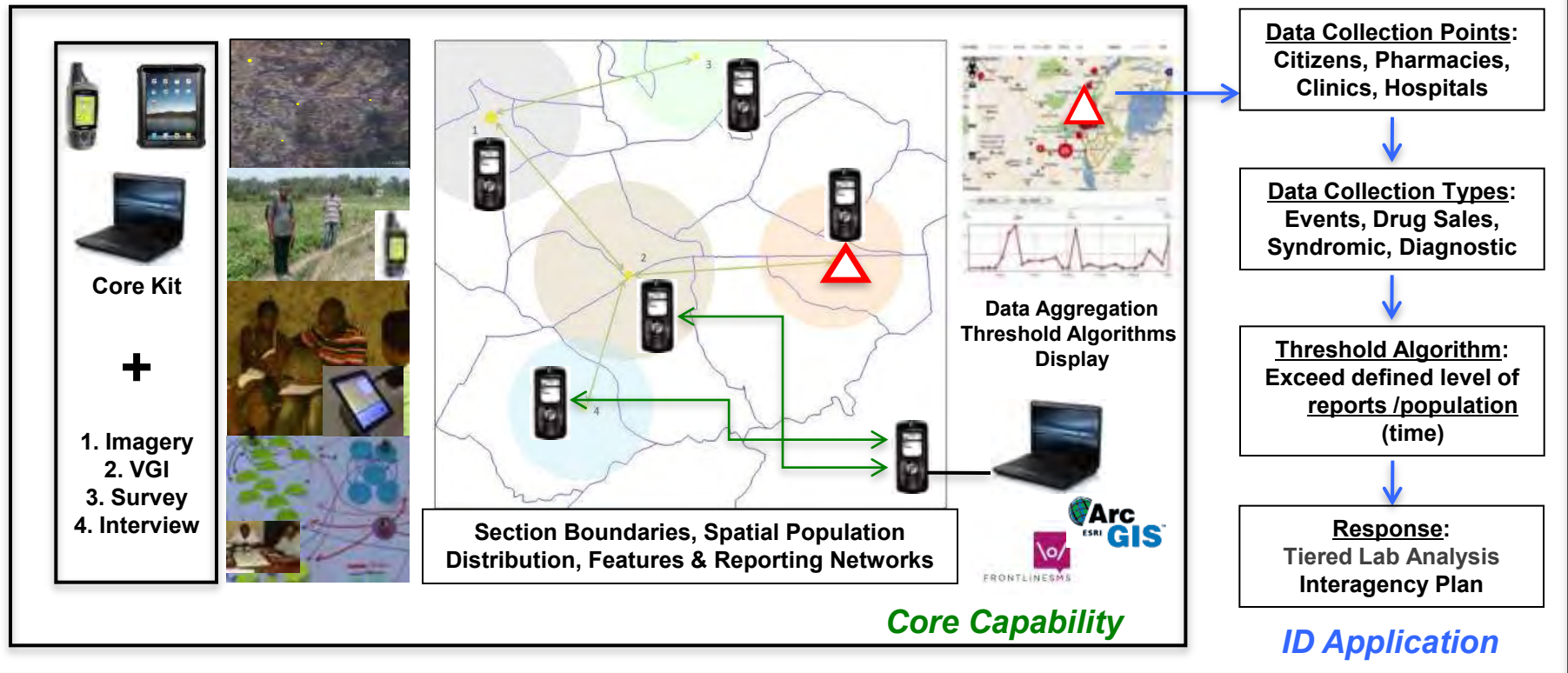


# Motivations in Disease Surveillance



Early Detection of Disease Provides Improved Public Health and Medical Outcomes

# Example: Real-Time, Spatial Syndromic Surveillance to Detect EID: A Dx Testbed FY11 Start





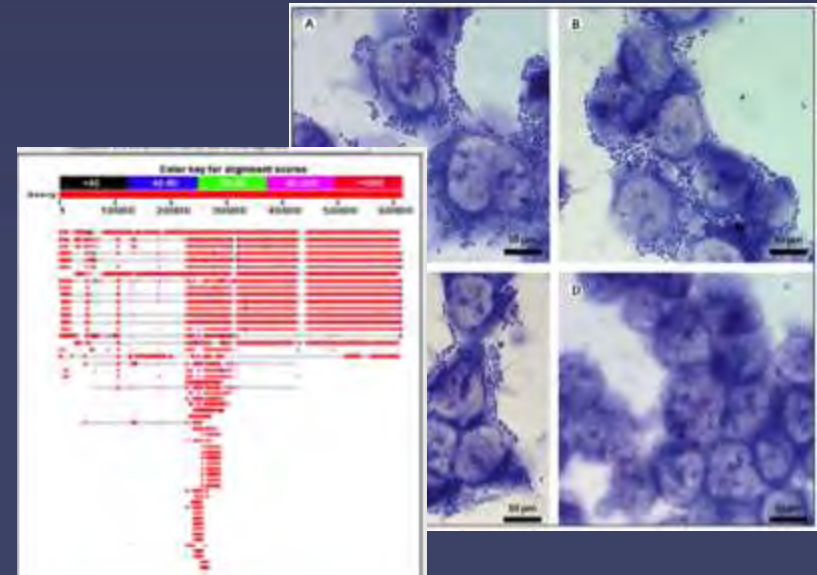
# E. coli 0104:H4 Characterization Efforts

## Advances the State of the Art in relating phenotype to genotype for emerging pathogens.

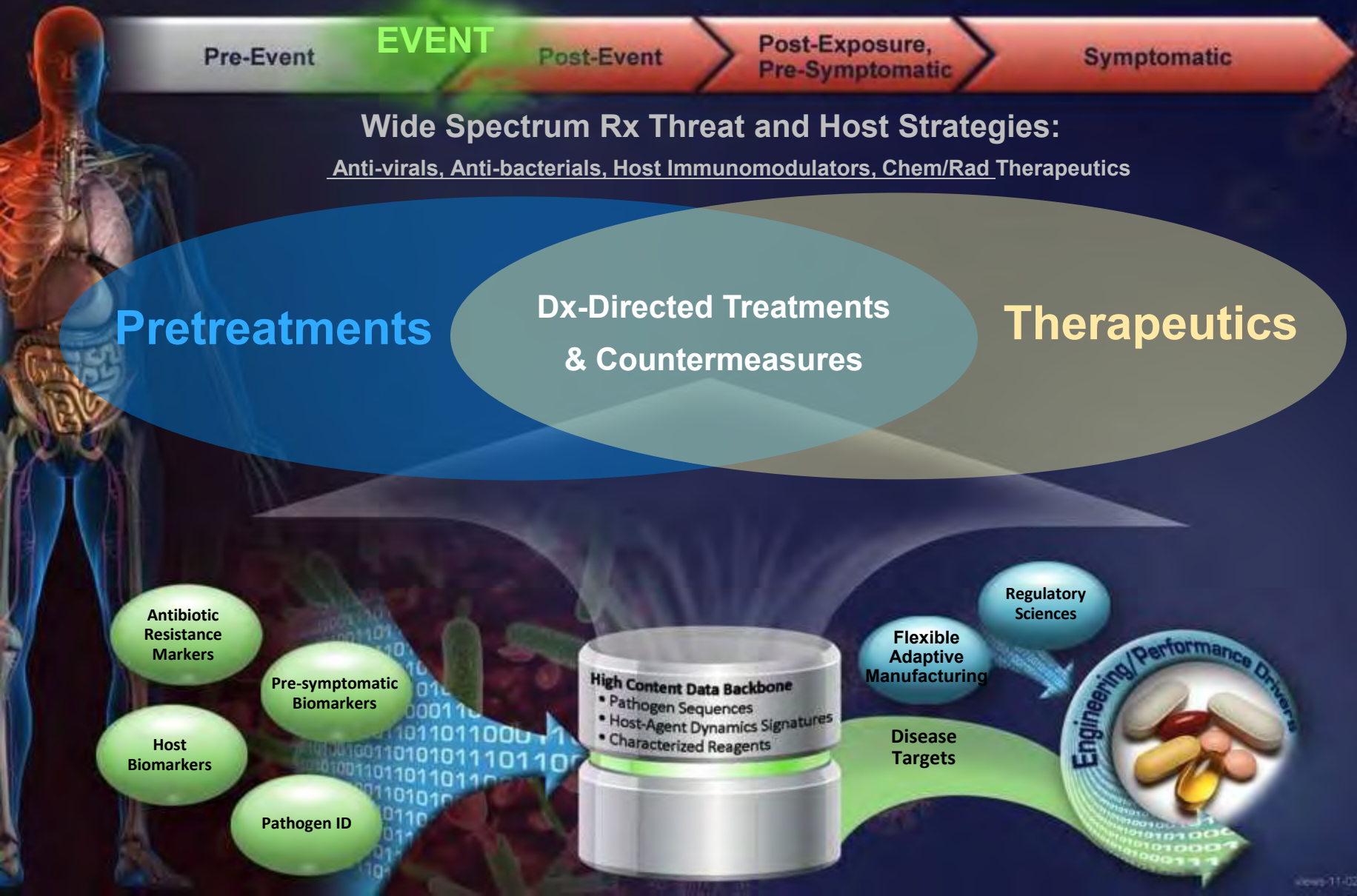
### Purpose:

- Explore deep genomic information for a biothreat agent using a combination of three 2nd-generation sequencing systems coupled with conventional finishing techniques.
- Correlate physical, clinical, and phenotypic observations to the improved genome using the suite of phenotypic assays available to the DTRA/CDC lab consortium

Part of an ongoing organic DoD process for enhancing therapeutic and diagnostic capabilities



# Strategic Thrust: Adaptive Medical Countermeasures





# Translational Medicine S&T Responsibility and Risk Reduction

Establish early criteria and translational teams for robust transition

Team 1: S+T ad

Team 2: S+T AD

Team 3: AD + s+t

## Minimum Criteria

PK/PD in relevant animal models

Pre-clinical Safety & Efficacy (NHP)

Therapeutic Index for Military Utility

Route of Administration

Standard of Care comparisons

Biomarker utility

Phase 0 exploratory IND

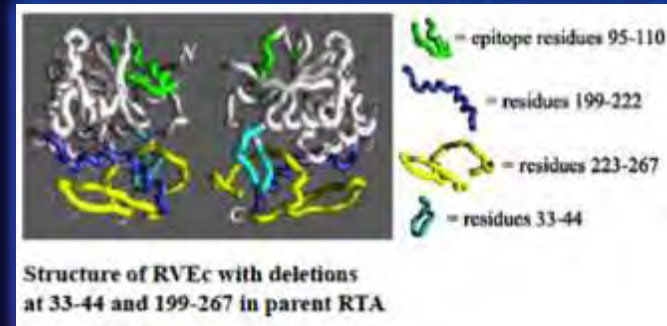
Robust  
Decision to  
Human Phase  
I studies



# “FIRST IN HUMAN” TRIALS



- Recombinant vaccine antibody molecule (RVEc) binding to Ricin toxin
  - Pre-Clinical RVEc experiments
    - Tested parenteral and aerosol challenge
    - 6+ month protection following last vaccination
    - Passive transfer studies against lethal subcutaneous challenges (i.e., 2.5, 5 or 10 LD50s) indicate antibody-mediated immunity
  - Clinical Phase 1 escalating, multiple-dose study (June - Sept 2011)
    - 9 first vaccinations w/ only minor adverse events; those vaccinated producing antibodies directed against the Ricin toxin
  - PI: USAMRIID investigators
- Transformational Medical Technologies Division funded the early stages



# CBDP Medical Countermeasures Biological Therapeutics

USAMRIID/Bayer

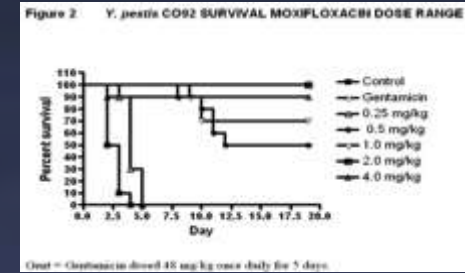
## Bacterial Therapeutics

### • Strategies

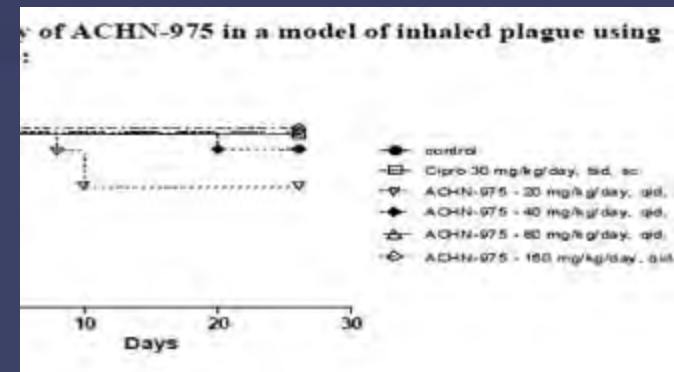
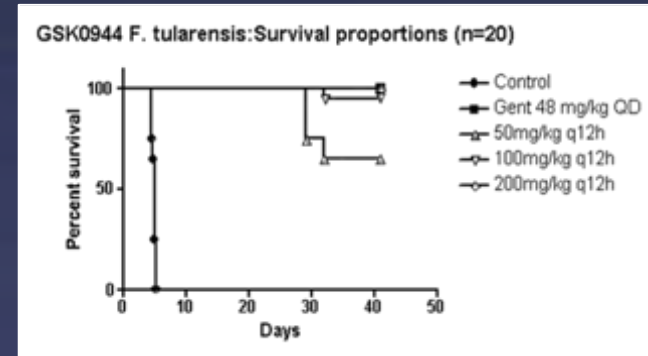
1. Discovery of unprecedented compounds (not necessarily a new target)
  - antimicrobials targeting bacterial biosynthetic pathways, virulence factors, resistance mechanisms, & host factors
  - antibiotic potentiators and immunomodulators
  - Major Performers: USAMRIID, GSK, Achaogen
2. Evaluation/re-purposing of FDA-approved antibiotics against select agents of interest
  - Major Performers: USAMRIID/Bayer

### • Technical Highlights

- 90% protection from death in mice after aerosol *Y. pestis* exposure with moxifloxacin
  - Greater than 90% survival in mice treated with GSK0944 after *F. tularensis* infection
  - ACHN-975 provides 100% protection from aerosolized *Y. pestis*
- **Payoff** – medical countermeasures effective against antibiotic resistant bacterial threats



GSK



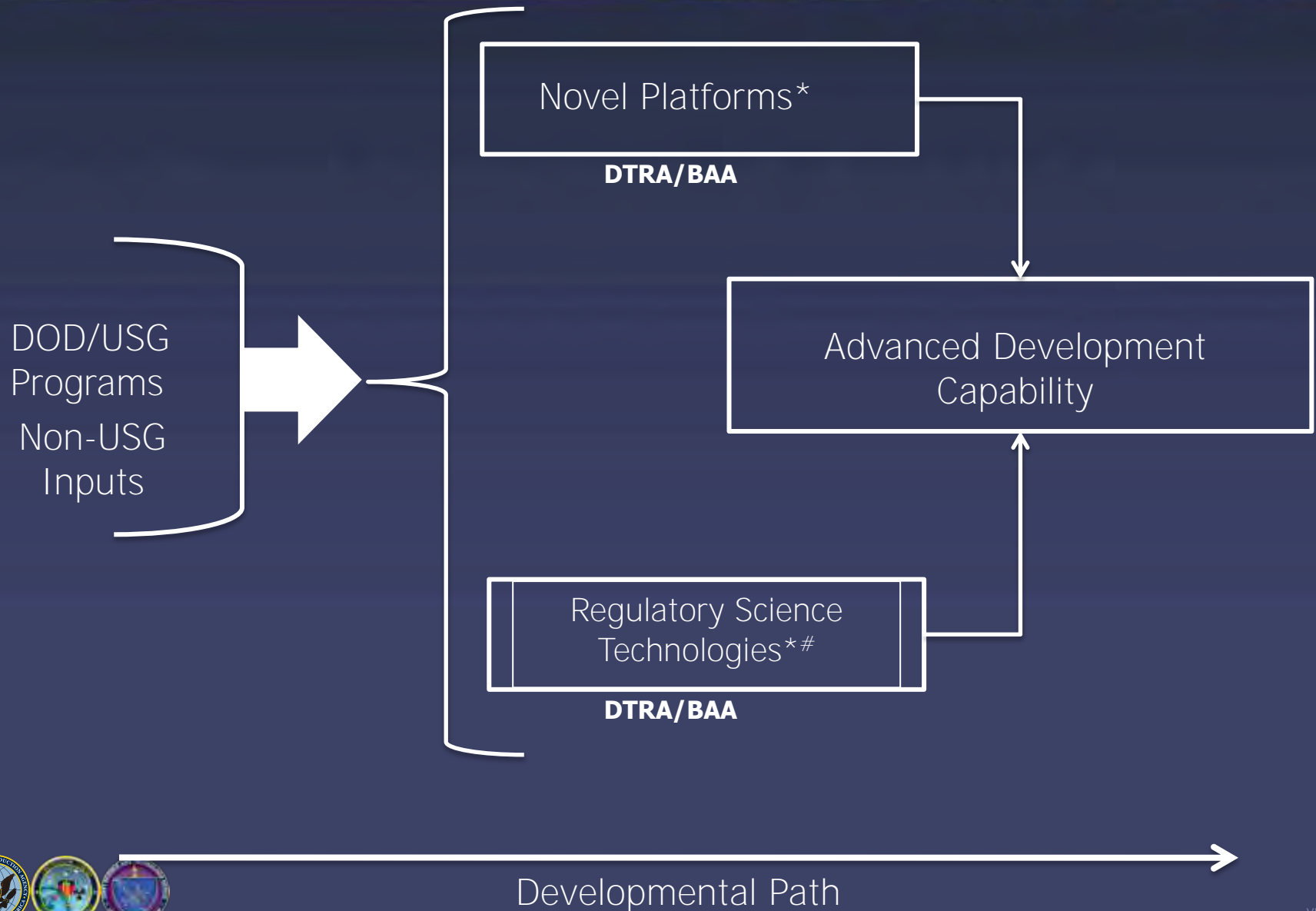
Achaogen





Fleishman, Baker, et al  
Science. 332(6031), 816-21.

# New Medical Countermeasures Initiative: S&T Into Advanced Development Capability





# Alternative Expression Vehicles for Manufacturing of Medical Countermeasures



*Tobacco (Nicotiana)*

- Demonstrated capability for producing millions of doses of multiple proteins
- No eggs required
- Demonstrated immunogenicity for influenza H1N1
- High assurance scalability 1M to 100M doses/month

## cGMP Validated



**Automatic Seeder Stock**



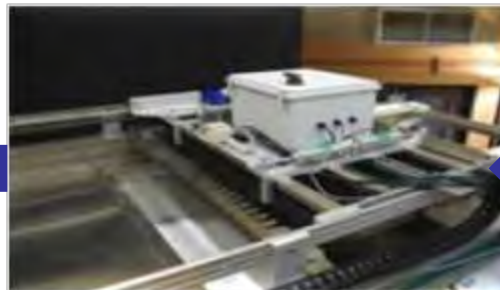
**Robotics**



**Automated Infiltration**



**Vaccine Purification**



**Harvesters (50kg pilot)**



**Growth Racks**

# Modular, Scalable, Mobile Manufacturing Systems

- Will employ a vacuum infiltration process (similar to the pilot scale facility) to produce a subunit vaccine
  - Engineering and processing design
    - 8 Modular and mobile bio-processing clean rooms
      - Accommodates large bioprocess equipment
      - Completely self-contained for mechanical services
    - Flow rack design
  - Process control design
    - Redundant service panels for electrical, load and emergency power distribution
    - Currently in equipment installation phase



Interior





# MIMIC: Clinical trial in a test tube for new Dx and predictive Rx efficacy

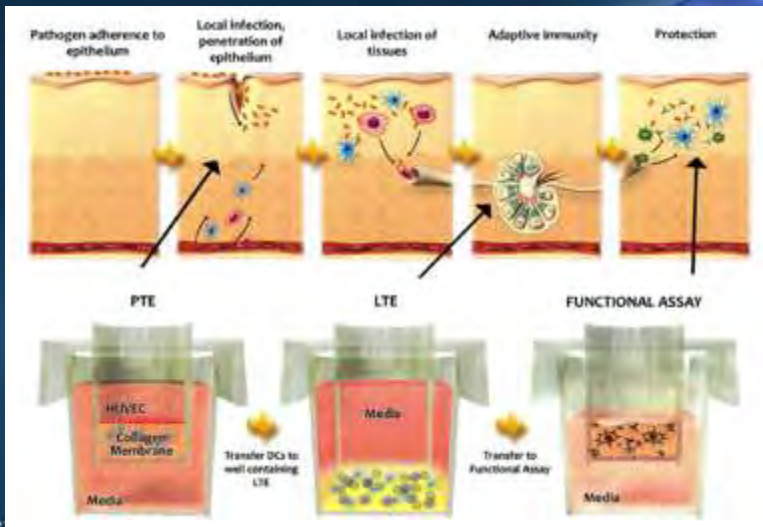
## THINKING OUTSIDE THE BODY

MIMIC: in vitro human immune system to get human data faster and smarter.

Uses primary human cells to better predict vaccine effects in human populations

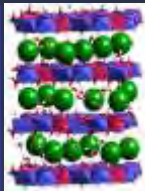
MIMIC can capture genetic diversity and environmental conditions

MIMIC system replicates human clinical data

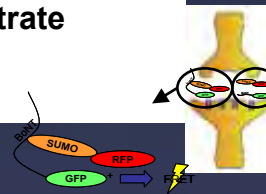


# Basic Research Strategic Targets

## Threat Agent Science



- Agent characterization
- Agent-substrate interaction
- Toxicology



- Molecular Mechanisms of injury
- Host/agent interactions
- Host response to pathogen interaction

## Basic Research



### Detection



- Algorithm Development
- Quantum dot biosensors
- Quorum Sensing



- Transport & Dispersion Models
- Pharmacokinetic models
- Hazard prediction with meteorological uncertainty

### Protection/Hazard

#### Mitigation



- Self Detoxifying materials
- Improved Barrier materials
- Filtration Materials
- Reactive Materials
- Nano-structured materials

- Life Sciences
- Physical/Medical Sciences
- Information Science

# Summary

- Science and Technology investments must be positioned for agility, resiliency, and innovation to maintain robust response and defense
- Active portfolio management and review must be in place to ensure healthy pipeline of innovation and products
- Diverse performer based including industry, academia and DoD/National labs must play a key role as partners in productivity of the portfolio

